A capabilities approach to environmental assessment

Enhancing the integration of human development and well-being in participatory environmental decision making

Nicholas Philip Simpson

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PhD supervisor: Dr Richard Hill

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Student number: MP I 009

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ABSTRACT

Building on the work of Martha Nussbaum and Amartya Sen, this research aims to enhance integration of human development and well-being in environmental assessment through developing a capabilities approach to the practice. The research emphasises the effectiveness and equity imperatives of public participation and highlights the inclusion of appropriate social considerations in environmental decision making. The participatory focus emphasises the potential for decision shaping by stakeholders and decision support for stakeholders to participate meaningfully in environmental assessment. The research develops an evaluative framework for public participation that better considers the capabilities of stakeholders. It explores the potential consilience of the capabilities approach and that of environmental assessment, with emphasis on the principles of justice in participatory decision making. A mixed methods approach explores, tests and evaluates a selection of five South African environmental assessment case studies using an applied capabilities framework. Four main methods are employed, a discourse analysis of environmental assessment reports, a conventional Q methodology, an adapted ranking Q methodology, and a survey using Likert scales. The research findings highlight the relationship between the stakeholder's capability considerations that relate to aspects of their 'ability', 'opportunity' and 'constraints' to participation. The research ranks an array of capabilities and provides insight into the types of capabilities stakeholders value highly when reflecting on their participation experience in environmental decision making.

Reflecting on the emergent findings from the cases, the research contributes to the praxis of environmental assessment through theoretical development. The theoretical framework focuses on an individual's participation capabilities as well as a broader consideration of capabilities for practice to increase the realizable opportunities, or freedoms, to choose the kinds of environmental futures that can reasonably be considered as valuable and sustainable. Capability concepts of 'ceilings', 'thresholds' and 'capability sufficiency' are commended as supplementary to existing practice specifications of 'meaningful' participation. The research commends that the capabilities approach has potential to be included as a core part of the training for assessment practitioners. It also concludes that the field of environmental assessment provides a rich empirical context for the development of a more robust sustainability-orientated capabilities approach.

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ii. LIST OF ACRONYMS AND ABRIEVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
CA	Capability Approach
DEA&DP	Western Cape Department of Environmental Affairs and Development Planning (Provincial government)
DEA	Department of Environmental Affairs (National government)
EA	Environmental Assessment
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EIAMS	Environmental Impact Assessment and Management Strategy of South Africa
EMP	Environmental Management Plan
fC	Functional Capability
GN	Gazetted Government Notice
HIV	Human Immunodeficiency Virus
IFC	International Finance Corporation
I&AP	Interested and Affected Party
Ls	Likert statement
MDPI	South African adapted Multidimensional Poverty Index
MPRDA	Minerals and Petroleum Resources Development Act
MWT	Mann-Whitney Test for Two Independent Samples
NEMA	National Environmental Management Act of the Republic of South Africa (RSA No. 107 of 1998)
NEPA	National Environmental Policy Act of the United States (USA No. 42 of 1969)
NIMBY	'not in my backyard'
PAIA	Promotion of Access to Information Act (RSA, Act No. 2 of 2000)
PAJA	Promotion of Administrative Justice Act (RSA, Act No. 3 of 2000)
Qs	Q-statement
REDZ	Renewable Energy Development Zones (RSA, Wind and Solar Strategic Environmental Assessment)
RI&AP	Registered Interested and Affected Parties
RSA	Republic of South Africa
SEA	Strategic Environmental Assessment
SIA	Social Impact Assessment
SRCC	Spearman's rank correlation coefficient
S&EIA	Scoping and Environmental Impact Assessment
WSRT	Wilcoxon Signed Rank Test

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1 CHAPTER ONE: INTRODUCTION

1.1 RESEARCH MOTIVATION AND RATIONALE

An environmental assessment that competently evaluates ecological elements yet is not cognisant of the broader and relevant socio-economic considerations can fall short of the sustainability imperatives intended as a purpose of the tool. In the field of environmental assessment, this research advances the integration of human development and well-being considerations in participatory environmental decision making through the development of a capabilities approach to the practice. In doing so, it emphasises the effectiveness and equity imperatives of public participation and highlights the inclusion of appropriate social considerations in environmental assessment. The participatory focus stresses the potential for decision modelling by stakeholders and decision help for stakeholders to participate significantly in environmental assessment. The capabilities approach provides a robust and flexible means of conceptualising human development and well-being. Through consilience with the theory and practice of environmental assessment, this research demonstrates that the capabilities approach holds potential for both enhanced public participation and the integration of broader and relevant socio-economic considerations in the practice.

Sen (1999a) has explained that the capability approach is not a general theory, but as the name implies, an approach, a way of thinking. Capabilities can be seen to be the critical hinge point between material resources and human achievements. There are two core concepts to the CA; a person's 'functionings' and a person's 'capabilities' (Robeyns, 2016, p. 9). The CA as sees a person's 'functionings' as a person's 'beings and doings', for example, a healthy and adequate diet or their literacy level. Their 'capabilities' are conceptualised as the authentic opportunities, or liberties an individual has to achieve such valued 'functionings'. The goal of a capabilities approach to environmental assessment is not a unified theory for environmental assessment (EA), or for public participation, but a contribution to a better understanding of the appropriate considerations for an improved practice. Evaluating the practice from the perspective of the capabilities approach (CA) requires understanding a stakeholder's reasons for wanting to participate and potentially influence a decision, as well as the extent to which decisions feedback to impact on that person's ability to live a life that they consider valuable; that is, on their capabilities. Concentrating on capabilities illustrates the view people hold of what they reflectively consider to be a good life. In this regard, the definition of 'environmental' considerations is broadened to include the social, economic and ecological context rather than a narrowly defined biophysical conception. The consilience of the capabilities approach with environmental assessment affords more appropriate schema in at least two ways. Firstly, it aids in scoping what the relevant issues are. By including capabilities in the scoping considerations, the elimination process of what is, or is not considered relevant, includes the stakeholder's formulations

of the good in light of affected person's abilities to live the type of life that they consider valuable. This applies to both the capabilities of individuals as well as the capabilities of ecological systems. This is elaborated in the theoretical framework in Section 5.1 as they relate to the minimally just conditions for participation and Section 5.2 as they relate to the anticipated feedback of environmental impact that result from decision making on capabilities for environmental choice. Secondly, it offers appropriate schema for integrating the socio-economic human development and well-being aspects in the assessment, evaluation, interpret facts in light of values and decision making procedures. Through integrating consideration of capabilities the practitioner is better equipped to consider and then address the human development and well-being impacts of developments. It becomes clear that the need for deliberations to be informed by a bottom up information base requires a participatory foundation. This research proposes that this participatory foundation of a capabilities approach to environmental assessment should include decision shaping by stakeholders and decision support for the stakeholders.

This research aims to enhance the decision making considerations of human development and well-being in environmental assessment. The research develops an appropriate evaluative framework for 'meaningful' public participation in environmental assessment that better considers the capabilities of stakeholders. The research then explores, tests and evaluates a selection of environmental assessment case studies using the applied capabilities framework. Reflecting on the emergent findings in the cases, the research contributes towards the praxis of environmental assessment through the theoretical development of a capabilities approach to environmental assessment. In doing so, the research targets the better integration of *ex-ante* considerations of capabilities. The research proposes that the CA has potential to be included as a core part of the training for an assessment practitioner and as integral to how a practitioner should apply their mind to each assessment. The research intends to make recommendations for policy, the practice and the further research agenda. The specific objectives of the research are set out in Chapter 3 where they are elaborated according to the selected methodologies and relevant structuring sections in the dissertation.

This research considers the participation experiences of five environmental assessment case studies in South Africa. The cases are drawn from a variety of types of environmental assessment practised in South Africa including a scoping exercise, a basic assessment, two scoping and environmental assessments, and a strategic environmental assessment. They also represent different types of development, spatial location, industry, developer (proponent), different assessment practitioners and a variety of publics that make up each of the cases' stakeholder groups. The cases are evaluated according to the participation experiences of carefully selected and representative

stakeholders with a particular emphasis on the normative expectation for equality and effectiveness of participation.

Environmental assessment is based on principles of sustainability, mitigation of negative impacts, an integrated approach and an emphasis on the participative inclusion of the public in the decision making. Two significant tools of environmental assessment are Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA). Both tools are investigated in this research. The research carries the assumption that the public participation process should play a recognised and integral role in decision making. In order to provide an evaluation of this role, the research conceptually and empirically distinguishes between participation and decision making. Environmental 'decision making' involves the entire environmental assessment process, from its inception through the scoping stage, the assessment stage, the evaluation stage to the final authorising decision (in the South African context) made by the competent authority. 'Public Participation' processes provide the windows of opportunity that are afforded to the registered interested and affected parties (RI&APs) in order to raise their concerns and contribute towards decision making. Depending on regulatory and practice characteristics, environmental decision making can be centralised or decentralised as well as more or less participatory. The research highlights the assumed instrumental nature that public participation *ought* to have in EA.

The research is motivated by the recent calls in the literature for a return to considering the foundational purpose of environmental assessment (Bond and Pope, 2012; Esteves *et al.*, 2012; Morgan, 2012). In doing so the research highlights the role that public participation should play in the decision making process (Sinclair *et al.*, 2008), together with the need for improved consideration of social aspects (Vanclay, 2002; Vanclay, 2014) in order for the practice to be better placed to achieve its stated goal of contributing towards sustainability (Balmford and Bond, 2005; Bell *et al.*, 2012; Pelenc and Ballet, 2015).

Weaver *et al*. (2008) challenge practitioners to contemplate the wider sustainability concerns for environmental assessment. This requires reflective consideration of improving the "health, income and living conditions of the poor majority", ensuring "equitable and sustainable use of natural resources now and into the future", and the acceleration of "economic growth with greater equity and self-reliance" (Weaver *et al*., 2008, p. 92). The practices of EIA and SEA have not evolved to adequately integrate these broader themes of sustainability. This research welcomes the challenge of these authors as particularly appropriate to the developmental state of South Africa and offers the use of the capabilities approach as a means for augmenting the human development and well-being considerations in the practice. In this regard, 'environmental assessment' is conceptualized by this research under the South African governments' comprehensive interpretation of the practice of EA to

include socio-economic impacts, as per the definition of ‘environment’ in the National Environmental Management Act of the Republic of South Africa (RSA No. 107 of 1998).

The research is also a response to the practice challenges faced in South Africa and the need for appropriately trained practitioners (DEA, 2014). In this regard, the research identifies two particular challenges. Firstly, it highlights the challenge of conducting meaningful public participation. Secondly, the research highlights the need for practitioners to reflectively apply their minds to the immediate human development challenges that might arise out of such ‘meaningful’ participation within a value plural society. In doing so, the research recognises the public and participatory foundations of environmental assessment. Normatively, the rationale for public participation adopts notions of influencing the decision, enhancing democratic capacity, social learning and empowering and emancipating marginalised individuals. These four normative rationales engender expectations that assume a quality of participation that goes beyond a checklist approach. Further, they indicate a prospect that participation could benefit the participant in meaningful ways. The research advocates for enhanced public participation in order for the practice to live up to its procedural and substantive rationale. It proposes the capabilities approach as a useful evaluative framework for considering the minimally just participation conditions for the practice and as a pragmatic substitute for what ‘meaningful’ participation can entail.

The justification for public participation in environmental assessment has been advocated based on a variety of propositions. Rather than following the discourse of one such proposition - that public participation is justifiable on the grounds that it can lead to ‘better’ environmental decisions - this research advocates that participation should be grounded on the principle of fairness. This implies a fair and equitable allocation of environmental benefits and costs. The emergent theoretical framework establishes what ‘minimally fair participation’ conditions can entail when conceptualized from the capabilities approach. These are conceptualised to be compatible with, and supervening of, the justifications for participation that may or may not be realisable based on the contextual characteristics of the project or environmental assessment.

The research centres on what fundamentals of the capabilities approach can suitably be applied to aid in 1) the evaluation of public participation, and 2) the integration of relevant human development and well-being consideration in environmental assessment. A meaningful participation process is anticipated to enhance the identification of what can be considered ‘relevant’. Though a mixed methods and case study approach, the research evaluates the public participation processes of the cases from the perspective of selected stakeholders and presents the findings of how stakeholders’ actions and capabilities indicate an evaluation of their participation experience. Integrating an evaluation of the participation with a focus on stakeholder capabilities, the research then focuses on their abilities, their opportunities, and barriers to their participation. It also considers the stakeholders’

value ranking of certain functional capabilities in the environmental assessments. Reflecting on the findings, the research presents the emergent theoretical development of a capabilities approach to environmental assessment. The proposed theoretical framework is grounded upon a focus on individual's participation capabilities as well as a broader consideration of capabilities for the practice that focus on an increase in freedoms to choose the kinds of environmental futures that can reasonably be considered valuable and sustainable. This requires a comprehensive and integrated understanding of the social, economic and ecological aspects of what constitutes the environment.

The methodology is primarily an inductive approach. It investigates emergent observations in the cases for the purpose of theoretical development. The construction and testing methods of the approach aim to supplement and mirror each other (Eisenhardt and Graebner, 2007). The research develops concepts for operationalization, applies them in empirical observation to a variety of cases, then through reflection on the findings, develops an emergent theoretical framework. The resulting output provides commendations and recommendations. The inductive approach commends the theoretical application of the capabilities approach to environmental assessment and to public participation. The commendations focus on minimally just arrangements for public participation and the feedback loops of participation choices on capabilities. Recommendations for the practice of environmental assessment are drawn from the observations of the cases and highlight the regulatory, best practice and the research implications for implementing a capabilities approach to the practice of environmental assessment.

The emergent theoretical framework provides a conceptual tool for environmental practitioners and decision makers. It emphasises the effectiveness and equity imperatives of public participation and highlights the inclusion of appropriate social considerations in environmental assessment (Section 5.1). It further proposes an outline of how a capabilities approach to EA public participation can fit within the general practice of environmental assessment (Section 5.2). Rather than setting a perfect standard for equitable public participation, the CA identifies a minimum participation requirement, or 'threshold', that cannot be reasonably rejected. The emergent theoretical framework proposed by this research does not specify what the capability thresholds should be, but provides an outline and criteria for their determination. Threshold specifications are proposed for contextual interpretation and determination at a project and local level by the professional participation facilitator. It is proposed that in such determinations the practitioner should be cognisant of three categories of capability sufficiency: (a) biological and physical needs, (b) the fundamental interests of the human agent, and (c) the fundamental interests of a social being (Nielsen and Axelsen, 2016).

The emergent theoretical framework proposes an outline how a capabilities approach to EA public participation can fit within the general practice of environmental assessment. This is proposed

through an extension of the capabilities focus to the *ex-ante* feedback consequences of the EA decision making process on capabilities. Section 5.2 elaborates the appropriate type of human development and well-being training for an assessment practitioner. It extends the EAPs' considerations to include in evaluation the realized impacts of EA decisions on the capabilities of current (horizontal capability distribution) and future generations (vertical capability distribution). Their quality of choice to influence the shaping of decisions is posited to be proportional to their available capabilities.

Drydyk (2010) has cautioned that participation, empowerment and democracy do not necessarily emerge together nor work together in a linear fashion. This is problematic for the face-value assumption of linearity proposed in the theoretical framework (Chapter 5), where capability expansion through participation indicates an increase in freedoms such as those of agency and choice. Drawing on Sen (1999b), the model outlines an instrumental relationship between participation and democratic governance in decision making that, when effective, would lead to an expansion of capabilities. This implies an increase in an individual's agency with an increase in the freedoms to choose the kind of life that one would consider valuable. The instrumental relationship assumes much regarding the nature of participation, unequal empowerment, sub-democratic development and the chance that participation can be betrayed from outside the process (Drydyk, 2005; 2010; 2011; 2013). The reader is encouraged to keep in mind a distinction and the tensions between theory and practice throughout the dissertation. This is well illustrated by the contrast between the normative intentions for a best practice and the realities of a sub-optimal practice. The research does not capitulate to a defeatist resignation with regard to the practice of public participation that is apparent in the literature and the attitude of many EA practitioners. Rather, it intentionally highlights the normative benefits of enhancing the practice of public participation and the role that it can play in enhancing the integration of human development and well-being considerations in the practice of environmental assessment.

The methodology used in this research explores aspects of stakeholder capabilities and functionings within the context of their participation experience of an environmental assessment. The research employs methodological triangulation in order to detect the relevant objects under examination. Correspondence in concepts used in the four methods to allow for a degree of inference with potential conclusions that have validity superior than what each method can provide on its own. The aim of triangulation for this research is not simply to corroborate findings, but to ground the theory through gaining a deeper and wider understanding of the application of the capabilities approach to environmental assessment public participation.

1.2 DISSERTATION STRUCTURE

This dissertation is structured according to six chapters. This first chapter provides an introduction and overview of the research. The research aim and objectives are indicated together with the motivation for the research. An overview of the dissertation structure is then explained in the following section.

Chapter 2 provides a literature review that includes four main sections. Section 2.2 covers the relevant literature regarding public participation in environmental assessment. This is followed by an overview of South African environmental law and public participation in Section 2.3. This section focuses on the legal and regulatory provisions for the inclusion of capability related aspects in environmental assessment. It reiterates the participatory foundation that is normatively intended for such decision making. Section 2.3 emphasises the ways in which the South African regulations and guidelines have endeavoured to ostensibly implement the best practice expectation for equal and effective participation in environmental assessment and highlights the immediate capability and human development challenges therein. Section 2.4 outlines conceptions of justice in the practice of public participation. Section 2.5 provides a detailed introduction to the capabilities approach. The discussion focuses on the foundational concepts of the approach, how they relate to public participation. Section 2.6 briefly highlights how the CA has been applied in the South African context. Section 2.7 provides a principled rationale for the selection of operationalizable concepts for the empirical research and outlines the shared public participation principles of the capabilities approach and environmental assessment.

Chapter 3 introduces the reader to the methodology of the research (Section 3.1). The aim and objectives of the research are presented again (Section 3.2) in order to foreground the operationalized concepts that have been selected from the previously explained capabilities approach. The methodology chapter is then structured according to four main explanatory sections: theoretical inclusion, measurement, application and quantification. Section 3.3 elaborates the theoretical inclusion of capabilities concepts for their operationalization and potential empirical significance to public participation in environmental assessment. Section 3.4 introduces the four main methods selected for the research to be applied to each case study as an empirical package. It explains how the methods explore emergent capability aspects in the cases and how theoretical concepts are transformed into empirical variables for measurement in the four selected methods. The methodological opportunities and limitations are identified and discussed for each method throughout the chapter. Section 3.5 illustrates how the capabilities variables are applied in a qualitative empirical analysis, with a focus on the contextual application for each case study. Finally, section 3.6 of the methodology chapter elaborates how the capability variables are applied in the quantitative empirical

analysis. Included in the methodology chapter is the explanation of the use of multiple methods and multiple case studies for the purpose of triangulation (Section 3.6.4).

Chapter 4 presents the analysis and discussion of the results. The data-rich nature of the findings from all four methods presents a challenge to the presentation and description of the results. Consequentially, a large portion of the 'raw data' is allocated to the Appendices and referred to through footnotes and in-text coding systems where appropriate. The findings from each method and from different cases are then presented under five theoretically structured sections. Section 4.3 presents the general observations of the participation experiences in the cases as they emerge from the Report Analysis and survey responses. Section 4.4 discusses how the findings indicate capability participation 'opportunity' related considerations. Following that, Section 4.5 provides an analysis and discussion of the findings regarding stakeholders' 'ability' (capability) related participation considerations. Section 4.6 discusses the findings on barriers to participation that are conceptualised as capability participation 'constraints'. Section 4.7 provides a triangulation of the 'ability', 'opportunity' and 'constraint' findings in the cases and discusses the general trends and relationships that emerge in the findings. Section 4.8 presents and discusses the ranking of certain capabilities as priority functional capabilities over others in the context of environmental assessment.

Chapter 5 provides the theoretical development emanating from the research. The first section draws on the findings in presenting an emergent and preliminary theoretical framework for a capabilities approach to environmental assessment. The framework is essentially participatory. This is the main commendation of the research and is split into two sub-sections. Section 5.1 outlines the guiding principles and conceptual foundation for a capabilities approach to public participation in environmental assessment. The emphasis in this framework is the goal of participation capability 'sufficiency'. The capability concept of 'sufficiency' is presented as a pragmatic alternative to the normative expectation of participation 'equality', which is sensitive to diversity yet does not compromise the intention of the original normative intention of fairness in participation. Particular importance is placed on identifying participation capability barriers in order to develop the appropriate type of process. A process that is sensitive to capabilities facilitates meaningful participation and overcomes unjust social arrangements.

Section 5.2 then proposes an outline of how a capabilities approach to EA public participation can fit within the general practice of environmental assessment. This is proposed through an extension of the capabilities focus on participation to the feedback consequences of EA decision making on systems and capabilities. This section is elaborated with particular emphasis on developing the appropriate type of human development and well-being training for an assessment practitioner. It extends the EAPs' considerations to include in the evaluation stage the realized impacts of potential decisions on the capabilities of current (horizontal capability distribution) and future generations

(vertical capability distribution). Their quality of choice for decision making is posited to be proportional to their available capabilities.

Chapter 6 provides the conclusions and recommendations of the research. Section 6.1 reflects on how the findings relate to the guidelines, regulations and policies for public participation in EA in South Africa. Recommendations are given that have implications for practice interpretations of the South African National Environmental Management Act (NEMA). These recommendations highlight the participation requirements and allocations of responsibilities for the provision of participation capability sufficiency. Section 6.2 provides a tentative extension of the observations in these cases to best practice public participation recommendations. Section 6.3 recommends that the practice of EA is a suitable and useful testing ground for the application of the capabilities approach. It recommends that the CA can benefit from further and repeated engagement with the practice of EA in ways that will strengthen the capabilities approach. Recommendations are made for the research agenda of further engagement of the CA with the environmental assessment practice. Section 6.4 reflects on the methodology used and provides some recommendations for their future application to EA and CA research.

2 CHAPTER TWO: REVIEW OF THE ENVIRONMENTAL ASSESSMENT AND THE CAPABILITIES APPROACH LITERATURES

2.1 INTRODUCTION

This literature review provides a description of the theoretical foundations of the practice of environmental assessment. It then presents the core concepts of the capabilities approach. It contextualises the research as it applies to the two separate disciplines and provides the descriptive foundation for the operationalization of applied concepts. The concepts selected and highlighted are scoped by the research aim of stakeholder capabilities for participation in environmental assessment (EA).

In the field of environmental assessment, this research aims to advance the integration of human development and well-being considerations in participatory environmental decision making through the development of a capabilities approach to the practice. In doing so, it highlights the efficacy and equity essentials of public participation and emphasizes the inclusion of suitable social considerations in environmental assessment. The participatory focus emphasises the prospective for decision shaping by stakeholders and decision provision for stakeholders to participate meaningfully in environmental assessment. The capabilities approach offers a forceful and adaptable means of conceptualising human development and well-being. Through consilience with environmental assessment, this research demonstrates that the capabilities approach holds potential for both better-quality public participation and the integration of pertinent socio-economic concerns in the practice.

The research centres on what fundamentals of the capabilities approach can helpfully be applied to support in 1) the evaluation of public participation, and 2) the integration of relevant human development and well-being consideration in environmental assessment. A meaningful participation process is likely to enhance the identification of what can be considered ‘relevant’. This chapter has four main sections. Following the introduction, Section 2.2 provides a review of the best practice environmental assessment literature regarding public participation. The discussion considers the evolution of the practice of public participation in EA as a regulatory tool for decision making. It highlights the current discussion in the literature that calls for better evaluation of public participation processes and outcomes. In doing so, the literature review reflects on both the international and South African best practice. The recurrent call in the literature for theory building in environmental assessment that adequately considers appropriate human development and well-being considerations is highlighted. With a specific focus on South Africa, the practice challenge of appropriately trained practitioners is also discussed in light of the South African Environmental Impact Assessment and Management Strategy (EIAMS) (DEA, 2014). The discussion suggests that developing a capabilities

approach to environmental assessment would assist in providing a more appropriate consideration of human development aspects. The research argues for the theoretical consilience of the capabilities approach and environmental assessment as a means to facilitate this challenge to the practice. A corollary of this consilience is that it holds potential for the training of assessment practitioners, which can assist in the practitioner's consideration of the human development considerations; particularly in public participation processes.

Section 2.3 presents an overview of the constitutional and regulatory provisions for public participation in environmental assessment in South Africa. The legal foundations for public participation in the South Africa National Environmental Management Act (RSA, Act No. 107 of 1998) are grounded in a discussion on environmental justice. Relevant international and national treaties, law, policies and guidelines are highlighted with a focus on the normative expectation of provisions for equitable and effective participation. The review covers the current literature on the relationship between human rights and environmental rights in South Africa and discusses conceptions of justice in the legal provisions for public participation.

Section 2.4 provides an overview of the capabilities approach (CA). The CA literature is presented in order to introduce the reader to the foundational concepts of the approach. The ethical foundations of the approach are highlighted. This description reflects Amartya Sen's (1999b) imperative of the removal of unjust arrangements in society for the purpose of increasing an individual's freedoms to choose the kind of life they have reason to value. Public participation is highlighted by the CA as a potential means to such ends within a functioning democracy. Nussbaum's (2003) list of central human capabilities is introduced together with the workability and generalizability of her list.

Recent literature that has engaged the CA with meaningful ecological and sustainability orientated considerations is highlighted. The significant engagement of the CA with ecological and sustainability considerations is posited as a motivating factor for the relevance of this research to current developments in both the CA and EA. A growing, but to date, a limited amount of research has been done in South Africa that has adequately applied the CA. This section highlights those studies that are relevant to this research by way of baseline studies and fields of research application. The literature review identifies that both the application of the CA in the South African context, and the application of the CA to environmental assessment are relatively novel. The potential benefits of such application are motivated for and posited to hold value for the practice of environmental assessment.

2.2 ENVIRONMENTAL ASSESSMENT AND PUBLIC PARTICIPATION

This section outlines the two tools of environmental assessment (EA) that are explored in the case studies namely, environmental impact assessment (EIA) and strategic environmental assessment (SEA). It explains the role and purpose of public participation in environmental assessment. Morgan (2012, p. 6) has observed that in the 40 years since the first environmental legislation was promulgated in the National Environmental Policy Act of the United States of America (NEPA, Act No. 42 of 1969), EIA "is now universally recognised as a key instrument for environmental management, firmly embedded in domestic and international environmental law".

Table 1: Guiding principles of EIA and SEA as tools for environmental assessment

General principles of EIA (Abaza *et al.*, 2004, p. 42)	Guiding principles of SEA (Therivel, 2004, p. 8)
EIA *should*: 1. Be applied as a tool to help achieve sustainable development. 2. Be integrated into existing development planning and approval processes. 3. Be applied as a tool to implement environmental management. 4. Be integrated into the project life-cycle. 5. Be applied to all proposed actions that are likely to have a significant adverse effect on the environment and human health. 6. Include an analysis of feasible alternatives to the proposed action. 7. Include meaningful opportunities for public involvement. 8. Be carried out in a multi- or inter-disciplinary manner. 9. Integrate information on social, economic and biophysical impacts to the maximum extent possible.	SEA *should*: 1. Be a tool for improving strategic action. 2. Promote participation of other stakeholders in the decision making process. 3. Focus on key environmental/sustainability constraints, thresholds and limits at the appropriate plan-making level. 4. Help to identify the best option for the strategic action. 5. Aim to minimise the negative impacts, optimise positive ones, and compensate for the loss of valuable features and benefits. 6. Ensure that strategic actions do not exceed limits beyond which irreversible damage from impacts may occur.

Table 1 presents the general principles of EIA (Abaza *et al.*, 2004) and the guiding principles of SEA (Therivel, 2004) as tools for environmental assessment. It provides a distinction between the purpose of the two environmental assessment tools of EIA and SEA. Table 1 illustrates that there is a significant overlap in the principles as they relate to the decision making intentions of the two tools. Both include the consideration of sustainability, mitigation of negative impacts, an integrated approach and an emphasis on the participative inclusion of the public in the decision making. The divergence between the two tools is on grounds of the narrow focus of EIA. Bina (2012) highlights that in its original NEPA conception, environmental impact assessment (EIA) was originally intended to apply to strategic as well as project level decision making. However, the term EIA has evolved to apply almost exclusively to *ex-ante* project level assessment. The main purpose of environmental assessment is "to facilitate the systematic consideration of environmental issues as part of development decision making" (Abaza *et al.*, 2004, p. 42). In contrast, strategic environmental

assessment (SEA) has evolved to suit the needs of evaluation of policies, plans and programmes (PPPs) (Pope *et al.*, 2013).

Despite a plethora of emerging types of impact assessment, Morrison-Saunders and Retief (2012) have called upon practitioners to incorporate sustainability thinking into EIA practice in a manner that aims to attain to the purpose of EIA in its original NEPA conception. Morrison-Saunders and Retief (2012) have observed that, depending on the context, EIA practice varies regarding the degree of incorporation of socio-economic impacts or whether it is focused on biophysical impacts. In this regard, an EIA that competently evaluates ecological elements yet is not cognisant of the broader socio-economic considerations, can fall short of the sustainability imperatives intended as a purpose of the tool. This research has selected four South African EIA case studies and one SEA case study. Under the South African regime a broad interpretation of EIA applies, to include socio-economic impacts, as per the NEMA definition of 'environment'; this is further expounded upon in Section 2.3.

Since the 1970s, there has been an observed increase in participation in environmental assessment grounded on the notion that the governed ought to engage in their own governance. Glucker *et al.* (2013) identify a lack of consensus in the literature regarding a working definition of 'public participation'. Participation goes beyond what is implied by the limitations of the term 'stakeholder engagement', to 'involvement', or preferably, actual influence on the decision making. Sinclair *et al.* (2012, p. 85) highlight that "meaningful" participation should include the ability to influence the final decision, adequate timing in the EIA, fair and open dialogue and participant support.

The research distinguishes between participation and decision making conceptually and empirically. Environmental 'decision making' involves the entire environmental assessment process, from its inception through the stages of scoping, assessment, and evaluation through to the final authorising decision made by the competent authority. 'Participation' is the interfaces of opportunity that are provided to the registered interested and affected parties in order for them to advance their concerns and contribute towards the decision making. Environmental decision making can be centralised or decentralised as well as more or less participatory depending on regulatory and practice characteristics. The research emphasizes the assumed instrumental role that public participation *ought* to have in EA. It also highlights the reach and limitations of participation in influencing decision making in light of the kinds of environmental futures that stakeholders consider valuable.

There is increasing acceptance that public participation in environmental assessment (EA) is essential to reflect and recognise democratic ideals and augment trust in regulators and governance systems (Palerm, 1999; Doelle and Sinclair, 2006; Lockie *et al.*, 2008; IFC, 2012). It is considered more ethical and better democratic practice for those parties affected by an environmental impact to be involved in decisions (Hartley and Wood, 2005; O'Faircheallaigh, 2010). On this basis Picciotto (2014, p. 52) defines participation as the "real involvement of all social actors in social and political

decision making processes that potentially affect communities in which they live and work". Lawrence (2003, p. 401) argues that best practice requires that "all interested and affected parties have a right to participate effectively in the EIA process". Ehrlich and Ross (2015) identify that stakeholder values should be included in determining significance and provide a potentially valuable source of input for the decision maker's considerations. Burdge (2003, p. 229) observes that public participation and the identification of social impacts can work together and improve the information base for EA decision making considering how a "proposed action will change the lives of individuals and the affected community". João *et al.* (2011, p. 170) highlight that impact assessment processes should take all possible opportunities for the "enhancement" of, *inter alia*, "social and community development [and] improved health and well-being". The best practice evaluation of social impacts is generally considered to be fundamentally participatory (Esteves *et al.*, 2012).

The following four sections elaborate on the practice of public participation in environmental assessment. The sections highlight the challenge of integrating social considerations in EA (Section 2.2.1), the practice notion that 'better' EA decisions can be reached through public participation (Section 2.2.2), the need for continual and appropriate theory building in environmental assessment (Section 2.2.3) and what training would be appropriate for practitioners to address the three aforementioned challenges to practice (2.2.4).

2.2.1 ENVIRONMENTAL ASSESSMENT: THE CHALLENGE OF INTEGRATING SOCIAL CONSIDERATIONS

The body of knowledge and practice known as environmental assessment has been in constant development since the 1970s. Environmental assessment has engendered legal procedures in over 190 countries, and it is widely used as a tool for decision making. Social and human well-being considerations are ostensibly considered within the ambit of legal definitions of 'the environment' (Glazewski, 2005). The infrequent integration of the environmental and the social impacts in EIA projects remains a sensitive point of the procedure (Morrison-Saunders *et al.*, 2014). This evident 'gap' has resulted in the emergence of social impact assessment (SIA) as a conceptually distinct instrument from EIA. In South Africa, and in many other parts of the world, SIA has been considered to be a neglected component of EIA (Hildebrandt and Sandham, 2014). SIA broadened the scope of impact assessment from 'plans and projects' to the more general notion of 'development', extending the idea of the environment beyond natural systems to include the idea of the human environment (Vanclay, 2014). However, the fundamental principles of SIA are grounded in the rationale of EA tools such as environmental impact assessment as an exercise of foreseeing, modelling and monitoring the consequences of human activities in and on the living environment.

The broader reach and scope of SIA, however, is not meant to replace the 'narrower' scope of EIA, whose privileged focus on spatially-relevant projects keeps the EIA procedure a firm legal requirement in South Africa and many other countries. The potential consilience of SIA with the capabilities approach is a potentially fruitful research agenda. The stand-alone tool of SIA is however omitted in this research. In response to scarce integration of the environmental and the social impacts regarding EIA projects and in response to the recent call for 'integration' in EIA (Greig and Duinker, 2014), this research empirically investigates social impacts as they are conceived and integrated within environmental assessment cases.

Despite disagreement over a definition of integration in assessment (Morrison-Saunders *et al.*, 2014), the working definition of this research for integration is to bring together "different types or categories of impacts, e.g. biophysical and socio-economic (horizontal integration); linking together separate assessments undertaken at different levels/stages (vertical integration); and integration of assessments into decision-making" (Hacking and Guthrie, 2008, p. 84). In this regard the research adopts the position of Geneletti (2013, p. 213) who argues that:

> If impact assessment is fragmented into many specialist types, these two phases are inevitably carried out separately. This … is detrimental to the design phase, because a genuine and creative development of alternatives requires all expertise and values to be integrated.

Morrison-Saunders *et al.* (2014) argue that the foundational conceptualization of impact assessment in section 102(2) of the NEPA demands a comprehensive and interdisciplinary coverage of the 'quality of the human environment' and 'natural and social sciences'. This is not a novel observation but a recurrent call to revisit the foundations of the practice (Vanclay, 2006). Abaza *et al.* (2004), Lee *et al.* (1999) and subsequently Hacking and Guthrie (2008) concur with the notion that the biophysical environment will only be successfully managed by adopting a holistic view of the environment. Environmental assessment cannot be managed independently of social and economic matters. This trend in the literature provides motivation for the thesis of this research which advocates for greater consideration of human development considerations in EA. Morrison-Saunders *et al.* (2014, p. 2) further contend that:

> …the proliferation of different impact assessment types creates separate silos of expertise and feeds arguments for not only a lack of efficiency but also a lack of effectiveness of the process through excessive specialisation and a lack of interdisciplinary practice.

Hacking and Guthrie (2008) identify areas that are given insufficient attention as a result of this. These include social themes and neglected issues such as gender, health, biodiversity and climate. There is a concern that broadening the scope to include such issues would lead to a loss of focus. In particular, that biophysical concerns will be inadequately emphasised as they might be diluted or minimised by socio-economic considerations (Vanclay, 2014). Trade-offs can constitute a dilemma for decision makers. They highlight the potential incommensurability of categories,

"assessing the trade-offs between economic apples, social oranges and [bio]physical bananas" (Glasson *et al.*, 2012, p. 22). A further confounding factor in evaluating trade-offs is ascertaining whether social impacts are positive or negative since they are not consistent across a community, cannot be precisely defined, are subject to value judgments, and people may change their minds over time (Vanclay, 2014).

The lack of integration of social aspects, in particular, those of equity and quality of life, are also observed in strategic assessments (Lamorgese and Geneletti, 2013). Figure 1 below illustrates that, according to their capability-sensitive framework, the socially orientated principle of 'equity and quality of life' was observed to be addressed satisfactorily in only 36% of the 15 SEAs they evaluated.

Figure 1: Overall rate of questions addressed by SEA environmental reports, broken down by seven sustainability principles (Lamorgese and Geneletti, 2013, p. 124)

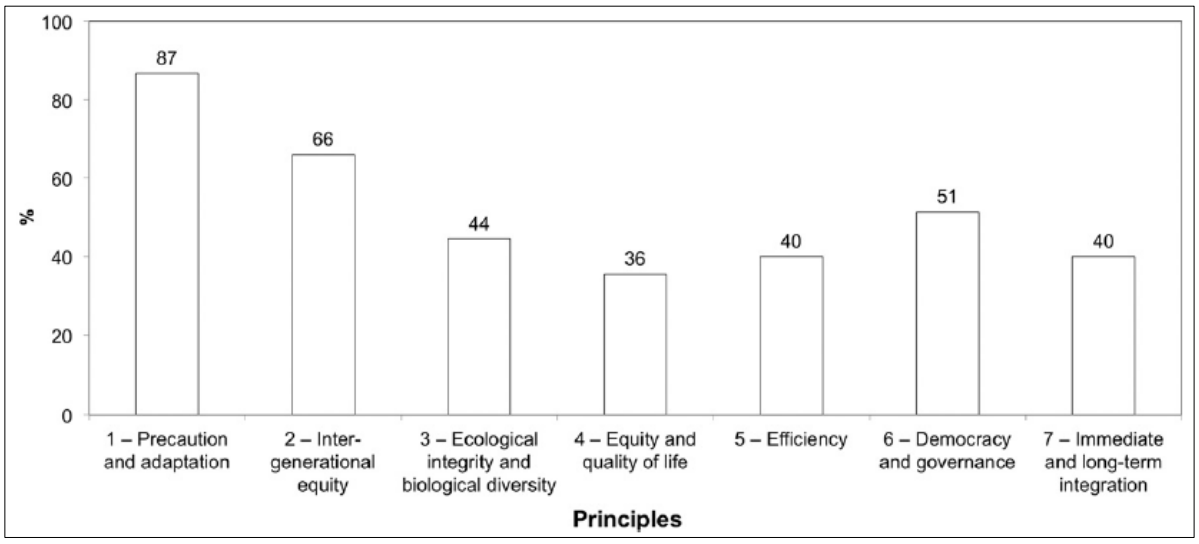


Figure 1 illustrates that Lamorgese and Geneletti (2013, p. 122) found that only two cases explicitly identified adequately differentiated social groups, environmental equity was never addressed and "none of the SEA environmental reports included considerations on the distribution of environmental costs and benefits".

Burdge and Vanclay (1995) identify a number of difficulties in the evaluation of social impacts. They identify, *inter alia,* difficulties in applying the social sciences to impact assessment, difficulties with the process itself and what they describe to be the prevailing "asocial mentality" of developers and decision makers (Burdge and Vanclay, 1995, p. 69). The implications for these challenges are important for the considerations of a capabilities approach to environmental assessment. They propose that these challenges, particularly an 'asocial attitude', can lead to:

- A failure to accept the need for social impact assessment.
- Lack of recognition of the need for special skills or expertise to assess social impacts.

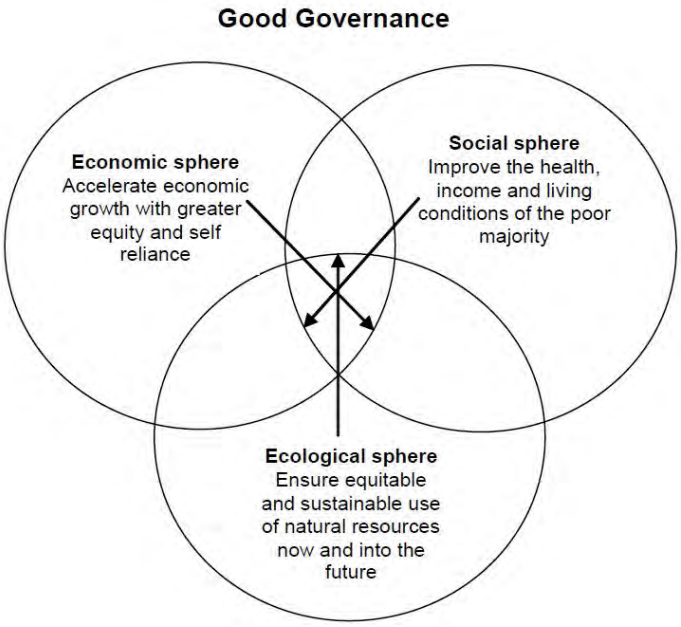
- Erroneous expectations that social impact statements do not need to provide anything other than a statement about the change in the number of jobs, and the number of children going to school.
- Difficulty in understanding the use and integration of public involvement in the process.
- A lack of understanding about how long it would take and how much it would cost to do the job adequately.
- A lack of understanding, and often disagreement with the results of social impact studies.
- Specialist interest groups defining problems and seeing results from their point of view, and attempting to use social assessments to their particular advantage, possibly distorting the intent of the study or the specific results in the process.
- A misunderstanding that problem solving of social issues can be achieved through singular mitigation strategies as they might be in the physical sciences.
- A lack of recognition of the complexity and heterogeneity of society, and how the impacts of developments benefit and disadvantage different components of society in different ways (Burdge and Vanclay, 1995, p. 70).

Environmental assessment is considered by this research to be inadequate if it has not considered the relevant social considerations for decision making. The working definition for the consideration of social impacts for empirical evaluation of the selected case studies is drawn from Vanclay (2006, p. 9):

> The processes of analysing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions. Its primary purpose is to bring about a more sustainable and equitable biophysical and human environment.

Environmental assessment is a tool that is intended to contribute towards sustainable development (Cherp, 2007). Sustainability requires a balanced view of the relevant social, ecological and economic considerations. The definition that Vanclay (2006) provides suggests that the realized consequences of social impacts require careful and appropriate consideration with sustainability as a central concern. It also suggests that there should not be an unequal distribution of impacts on affected persons. Beyond the often-limited scope of EIA, Weaver *et al.* (2008) challenge practitioners to consider the broader sustainability considerations for environmental assessment. They advocate for the practice of environmental assessment to achieve "positive gains for the environmental, social and economic parameters of development proposals" (Weaver *et al.*, 2008, p. 91). Figure 2 below illustrates how Weaver *et al.* (2008) conceptualise the sustainability 'vectors' of environmental impact assessment in light of the southern African sustainability goals as enunciated in the Southern African Development Community policy and strategy for environmental assessment and sustainability (SADC, 1996).

Figure 2: Moving towards the goal of sustainability within the overall context of good governance (Weaver *et al.*, 2008, p. 92)



Weaver *et al.* (2008) note that this requires reflective consideration of improving "health, income and living conditions of the poor majority", ensuring "equitable and sustainable use of natural resources now and into the future", and the acceleration of "economic growth with greater equity and self-reliance" (Weaver *et al.*, 2008, p. 92). The practice of EA has not evolved to satisfactorily integrate these broader social components of sustainability.

In response to the challenges to integration and with an emphasis on the need to consider the triple bottom line in impact assessment, Hacking and Guthrie (2008, p. 75) propose a spectrum of sustainable development directed features for EA. They emphasise that for EA to adequately consider, and thereby contribute towards sustainability, three aspects are required.

1. Comprehensiveness: To what extent the relevant sustainable development themes are covered.
2. Integratedness: To what extent the assessment techniques are used, aligned, connected, compared and combined
3. Strategicness: To what extent the assessment balances its focus with a broad forward looking perspective (Hacking and Guthrie (2008, p. 75).

These three aspects are highlighted when considering the qualitative difference between decisions that aim for a 'strong' sustainability and those that aim for a 'weak' sustainability. A weak sustainability assumes that natural capital and manufactured capital are essentially substitutable and that there are no essential differences between the kinds of well-being they produce (Ekins *et al.*, 2003; Neumayer, 2012). With this type of approach, one can logically compensate the degradation of natural capital by the estimated equivalent amount of manufactured or financial capital. In contrast to

'weak' sustainability, a number of authors have formulated a 'strong' conception of sustainability (Pelenc and Ballet, 2015, p. 40). The United Nations Development Programme (2011) have argued:

> Today's generation cannot ask future generations to breathe polluted air in exchange for a greater capacity to produce goods and services. That would restrict the freedom of future generations to choose clean air over more goods and services (UNDP, 2011, p. 8).

'Strong' sustainability assumes that the substitutability between natural capital and other forms of "capital should be strictly limited to the circumstances where the use of the services provided by natural capital does not lead to the irreversible destruction of this capital. This is because its depletion cannot be compensated for by investing in other forms of capital" (Neumayer, 2012). The 'strong' sustainability approach holds that certain elements of natural capital are "critical" due to their unique contribution to human well-being (Pelenc and Ballet, 2015, p. 37). These potentially acute elements to human existence and well-being can be conceptualised as ecosystem services provided by natural capital (Brand, 2009). It is on the force of this argument that the capabilities approach to environmental assessment envisioned in this research would base its decision making criteria on a 'strong' conception of sustainability which takes an integrated approach to impact evaluation.

Vanclay (2002, pp. 185-186) affirms that impact assessment that adequately considers the relevant social issues at hand needs to consider the following indicators: "people's way of life, their culture, their community, the quality of their environment, their health and well-being, their personal property rights and their fears and aspirations". In discussion of these indicators, Vanclay (2002) identifies that social impact assessment needs to go beyond listing social change processes. This research welcomes his emphasis that indicators are not impacts themselves and that evaluation needs to identify "social impacts that are experienced or felt in corporeal or perceptual terms" (Vanclay, 2002, p. 200). This imperative of considering the realized effects on affected persons is a central theme of the capabilities approach to be outlined later in this chapter.

2.2.2 'BETTER' DECISIONS THROUGH PUBLIC PARTICIPATION IN ENVIRONMENTAL ASSESSMENT

Shepherd and Bowler (2010) argue that going beyond the minimum requirements for public participation can add value to the public, the project, and the final design. Public participation has been justified on the grounds of adding quality to the decision making through the potential co-design and contextual adaptation and through incorporating local perspectives (Enserink and Monnikhof, 2003). Hartley and Wood (2005) argue that the focus for improving public participation in EIA needs to target early opportunities for participation as well as making sure that such opportunities are effective.

The focus of a debate in the EA literature considers on how to procedurally go about public participation as a participatory planning tool (Richardson, 2005; Doelle and Sinclair, 2006; Isaksson *et al.*, 2009). The complexities of development proposals have led to the increased importance of the inclusion of local stakeholders in order to achieve better decisions. Beyond the human right to participate, inclusive public participation has been seen as valuable to making problem solving and planning more effective (Bell *et al.*, 2012) and as a core principle of sustainable development (Jay *et al.*, 2007).

There is a wide-ranging body of literature regarding typologies of public participation (Rowe and Frewer, 2000; Rowe and Frewer, 2004; O'Faircheallaigh, 2010). However, Rowe and Frewer (2004, p. 285) clarify that despite, "the plethora of engagement mechanisms that have been developed and used, there are relatively few definitive accounts of their natures (and these are often contradictory)".

In addition to the typological uncertainty expressed by Rowe and Frewer (2004), within the sustainable development literature, Bell *et al.* (2012) identify a lack of clarity on how engagement mechanisms actually work. They found that, before 2006, although the majority of research discusses the merits of how various typologies of participation could be undertaken, "less attention was directed to the specific mechanics of enabling participation" (Bell *et al.*, 2012, p. 16). For sustainable decision making, this is a recurring concern as it shows a lack of methodological and theoretical reflection on practice regarding measurable outcomes and the stakeholder's individual-level experience of public participation.

In the many debates in the environmental assessment literature regarding effectiveness, although political systems and stakeholder capacities are often highlighted, there are few widely adopted solutions (Kolhoff *et al.*, 2009). There is further disagreement regarding criteria for effectiveness and equity evaluation (Palerm, 2010). As a result, evaluations have been limited in the literature to critiques of procedural aspects (Cashmore *et al.*, 2004) rather than on the capabilities of stakeholders themselves. Together with this, the legal-rational practice of environmental assessment often leads to procedurally focused checklist approaches to the public participation process as well as social impact identification (Vanclay, 2006). Such checklist approaches account for idle performativity in the practice where routine procedural compliance becomes the central objective of the assessment.

Due to contextual variations and differences in country EA regimes, despite many proposals (Webler, 1995; Webler *et al.*, 1995; Palerm, 2010; Shepherd and Bowler, 2010), no unified and agreed upon evaluation criteria for public participation have been established (O'Faircheallaigh, 2010). Bond and Pope (2012, p. 2) emphasise that it is "unlikely that any degree of consensus will be achieved on the appropriate lens with which to view impact assessment" but that the emerging

theoretical debates are of critical importance to the future of the practice. Bell *et al.* (2012, p. 16) caution that in their literature review they gained little insight that current research showed an awareness of "mapping the key issues of multiple perspectives held among stakeholders and the variable experiences which stakeholders would have during participatory events". In response to this observation by Bell *et al.* (2012), the 'Q-method' employed by this research, (to be explained in Section 3) intends to gain a deeper understanding of the various viewpoints that stakeholders develop through their experiences of engaging in EA public participation processes.

Public participation is considered a useful way to increase the legitimacy of both the project level environmental assessment as well as the regime's regulatory context of operation (Salomons and Hoberg, 2014). There is however debate about the degree of influence the public should have. There is further debate regarding the interpretation of whom is to be considered a legitimate stakeholder based on a jurisdiction's definition of *locus standi*. In South Africa, such stakeholders are called an interested and affected party (I&AP). Salomons and Hoberg (2014, p. 73) caution that the changes made by the Canadian government from the broad interpretation of a "public interest standing" to that of a "directly affected" party create significant risks to the quality and legitimacy of the environmental assessment process. The realized influence public participation has on the outcomes of the process has been widely debated, which has contributed to discussions of the value that the process adds to the EIA, the project design and outcomes.

Table 2: The objectives of public participation (Glucker *et al.*, 2013, pp. 106-109)

Normative rationale	**Substantive rationale**	**Instrumental rationale**
a. Influencing decisions. b. Enhancing democratic capacity. c. Social learning. d. Empowering and emancipating marginalised individuals.	a. Harnessing local information knowledge. b. Incorporating experimental and value-based knowledge. c. Testing the robustness of information from other sources.	a. Generating legitimacy. b. Resolving conflict. c. Reflection.

Glucker *et al.* (2013) outline nine objectives of public participation which they categorize into normative, substantive and instrumental underlying rationales. Considered through the frame of Glucker's three categories of normative, substantive and instrumental objectives for public participation (Table 2), the imperatives for fair participation become clearer. Normatively, the rationale for EIA public participation adopts the notions of influencing the decision, enhancing democratic capacity, social learning and empowering and emancipating marginalised individuals. These four normative rationales engender expectations that assume a quality of participation that goes beyond a checklist approach. Further, they indicate a prospect that participation could benefit the participant in meaningful ways. Vanclay (2014, p. 7) has argued that the role of impact assessment should "encompass empowerment of local people; [and] enhancement of the position of … disadvantaged or marginalised members of society". Forester (2006, p. 447) highlights that

participation is often far from a benign process, that it includes a practical artistry combining, "learning and deliberation, negotiation and politics".

In addition to the practice challenges of participation and the integration of social considerations in environmental decision making, there are fundamental questions to be asked about environmental assessment. The following section outlines the debate in the environmental assessment literature that calls for further theory building for the practice. It then highlights the call from within the practice for the potential use of the capabilities approach as a means to supplement certain aspects of this theory building need.

2.2.3 THE NEED FOR THEORY BUILDING IN ENVIRONMENTAL ASSESSMENT

Lawrence (1997) identified that the practice of EA tools such as EIA have evolved without a sound conceptual foundation and motivates the need for more cogent theory building. Retief *et al.* (2014, p. 197) identified that in recent years, "a trickle of progress in theory building has emerged between the fields of environmental assessment, planning and decision making" which suggests that some progress is being made. There has been a shift from positivist to post-positivist approaches out of the recognition for the complexity of the interrelationship between impact assessment and decision making (Bond and Pope, 2012). This shift has, in part, been influenced by the enhanced prominence of public participation in environmental assessment together with a general challenge to the dominance of reductionist scientific models.

Cherp (2007) has recognised that interdisciplinary integration of the broad range of considerations for EA within a curriculum for an EA practitioner is a major challenge for European university graduates entering the EA industry. Earlier interdisciplinary environmental programmes were founded on the assumption that natural science should guide the formulation of EA theory. Despite the development of greater interdisciplinarity in EA theory, Cherp (2007, p. 40) concludes that "due to greater immersion in unconnected social and natural science theories at universities, graduates entering EA practice often do not find it easy to connect across disciplines". Cherp (2007, p. 41) emphasises that we are "more and more in danger of ending up with fragmented pieces of disciplinary knowledge which never form an integral picture and never help in dealing with concrete holistic reality".

In his discussion on the imperative for theory building, Lawrence (1997) advocates that since EA cannot be value free, such theoretical advance needs to take cognisance of how perceptions, behaviour, and priorities are strongly influenced by values. Lawrence (1997, p. 90) recommends that:

1. Practitioners must make their own values explicit.
2. Values in theory and practice should be identified, critically evaluated, and justified.

3. Values of each stakeholder should be identified, principle value conflicts and potential mechanisms for conflict resolution should be identified.
4. Although values vary with context, it is necessary to identify and advance those that transcend situational values.
5. Conflicting values (e.g. economic, social, ecological) and value sources (e.g. personal, professional, institutional, and cultural) are evident in EIA theory and practice.
6. Environmental value differences often reflect fundamental conflicts of perspective and ideology.

All of the above value considerations are relevant for the emphasis of value-based decision making proposed here and conceptualised according to capabilities formulations. Theory for EA needs to cater for stakeholders' values formulation, articulation, debate, as well as the feedback revisions of such values between theory and practice. Lawrence (1997) proposes that a robust EA theory would provide for the continuum of values that have polarised the discourse of bio-centric and anthropocentric worldviews. He suggests that theory for EA needs to occupy the middle ground with a "duty-based form of anthropocentricism" (Lawrence, 1997, p. 82). Anthropocentrism is however dangerously unsustainable when devoid of ethics: it needs to be tempered by the principle of a duty of care for the environment. This well articulates the conciliation of the capabilities approach and EA theory (proposed in section 2.4) where Neumayer (2012, p. 576) claims that "properly understood, there is no real difference between human development and sustainable development".

This is particularly salient in the work of Patel (2008, p. 367) who argues that environmental practitioners are regularly "unable to consciously identify the values that they believe should drive the assessment" while, at the same time, stakeholders frequently bring to the EA process, issues that are considered peripheral to the ecologically orientated environmental considerations that are presented for decision making (for example housing, water and sanitation, poverty, unemployment, sense of place, HIV/AIDS amongst others). Where this is the case, the fundamental questions of value are not being evaluated in decision making, the sustainability criteria of proposals fall short of a 'strong' conception of sustainability and are divorced from the real life challenges of communities (Pithouse, 2006).

Lawrence (2003) and Richardson (2005) identify that EA has missed out on opportunities for learning from the field of planning. As a consequence, "EIA has largely failed to benefit from planning theory insights and lessons" (Lawrence, 2003, p. 307). Basta (2015) argues that planning should incorporate the capabilities approach into the evaluation of the consequences that are realized in society from the practice. This thesis motivates that similar consideration should be given to the CA from within the practice of environmental assessment. Basta (2015, p. 1) motivates for a conceptual shift for planners, from the established Rawlsian notion of justice as fairness 'in planning', to including the Senian capability orientation of 'planning for' realized justice. For EIA, this requires the evaluation of plans, projects and policies that consider realized impacts on individual lives. Audouin and de Wet (2012) have also called for thinking in environmental assessment to go beyond

main stream definitions of sustainability and be influenced by, amongst others, development economists such as Amartya Sen. Dawson *et al.* (2016, p. 204) argue that impact assessment, "should be based not only on consistent, objective indicators but pay attention to localized impacts on land tenure, agricultural practices, and the well-being of socially differentiated people". In a similar fashion to Richardson's (2005, p. 342) motivation for EIA to learn from developments in planning, the capabilities approach is be presented in Section 2.4 as an alternative approach to evaluation of the practice; to "see" EIA public participation "through the eyes" of the capabilities approach.

With specific reference to strategic assessment, Lamorgese and Geneletti (2013) have proposed a framework for considering the integration of sustainability principles in the empirical review evaluation of assessments. This research adopts their innovative inclusion of a strong sustainability that considers intragenerational and intergenerational equity in decision making with a focus that proposes the inclusion of the capabilities of affected persons. According to their framework, intergenerational equity needs to be evaluated according to what, "present options and actions […] are most likely to preserve or enhance the opportunities and capabilities of future generations to live sustainably" (Lamorgese and Geneletti, 2013, p. 117). Concerning equity and quality of life, Lamorgese and Geneletti (2013, p. 119) propose that projects should "Ensure equity of opportunity for everyone, particularly the poorest and most vulnerable members of the community and seek to create a good quality of life for everyone." Lamorgese and Geneletti (2013) argue that the democratic foundation of environmental decision making demands active and transparent public participation. The application of the capabilities approach to environmental assessment, to be described in more detail in the following sections, elaborates the workability and the importance of the consideration of capabilities in EA as a means for enhanced integration of human well-being imperatives in the practice.

2.2.4 APPROPRIATE TRAINING FOR ASSESSMENT PRACTITIONERS

Vanclay (2006, p. 4) highlights that historically there was "little comprehension about what considering social issues really meant, and how this would or could actually be done". A compounding difficulty for the practice was identified to be the reality that consultants were not properly trained to consider social impacts (Burdge and Vanclay, 1995; Esteves *et al.*, 2012). Patel (2008, p. 364) has observed that EA problem definition in the South African practice is often "determined by practitioners with a bias towards biophysical issues". This is partly understood to stem from the dearth of social sciences training for practitioners. In particular, the democratic, participatory and constructivist elements of social impact assessment pose significant challenges to professionals with positivist or technocentric training (Vanclay, 2006). In South Africa, Patel (2008,

p. 362) has further observed that the traditionally technocentric approach to environmental management has largely remained ignorant of the "huge cultural changes that have been sweeping through society, or the new ways in which people view their own lives and their collective identities". These challenges have multiple implications for the practice of EA. Two of which are of immediate relevance to this research concern how the practitioner structures and runs participation processes, as well as the consideration and integration of human development and well-being aspects into the EA in a way that is cognisant of the needs and values of the local interested and affected parties.

A number of the challenges identified in the international literature are also evident in South African practice. The South African Environmental Impact Assessment and Management Strategy (EIAMS) (DEA, 2014, p. 48) calls for greater professionalisation for EA participation practitioners and suggested that in South Africa; inter alia, "all public participation processes … [should be] run by an appropriately qualified and registered practitioner". At present, there is a broad and unregulated interpretation of what it actually means to be 'appropriately qualified' to run a public participation process for EA. From its inception, and in alignment with current regulations, the public participation process in South Africa is largely run by environmental assessment practitioners (EAPs) many of whom have strong ecological and scientific training. However the EIAMS has recognised that:

> …the facilitation of meaningful public participation requires skills which are not necessarily widespread in the environmental sector. Unlike other disciplines in environmental management where relevant expertise is provided routinely, public participation is not typically conducted by appropriately trained specialists (DEA, 2014, p. 48).

The professionalisation of the public participation practitioner proposed in the EIAMS is considered as one of the pillars for building the future of the practice (DEA, 2014). The motivation for this research is based on the recommendations of the EIAMS and the premise that EAPs require a more robust social science and human development training to adequately consider the human well-being considerations at hand and to fulfil their role as participation facilitator. In addition to their role as facilitator, the conceptual foundations of the EA practice needs the requisite conceptual tools in order to integrate the social considerations elicited into the evaluation and thereby considered in the decision making.

In addition to the need for greater professionalisation of South African environmental and public participation practitioners, Patel (2008) identifies that the practice itself exhibits an overdependence on private sector practitioners. This has led to problem definitions and proposed solutions to be detached from the direct influence of the state, with no assurance of a rationalisation of values with those of policy objectives and community needs. Patel (2008) further observes that when the provincial or national government decision making representatives adjudicate development applications, they face the challenge of searching not just for what is good in some abstract sense, but in contrast to the practitioner, to find what is good in the political sense. As a result, the practitioner,

the decision maker and the interested and affected parties do not necessarily align with each other in terms of what is considered the fundamental values underpinning a valid focus for, and scope of, an environmental assessment. Nor do they align regarding the particular emphasis of values which make up that stakeholder's notion of the good and which attribute calibrations of significance.

The disconnection that exists between stakeholders, practitioners and decision makers in South African participatory institutions is not unique to environmental assessment. Oldfield (2008, pp. 488-489) has characterized the limited achievements of local governance participatory mechanisms to "build slithers of consensus, but fail broadly to engage with the wide array of everyday organising in communities" and concludes, "participation through integrated planning processes has been superficial". Oldfield (2008) has observed that in the Western Cape, only a privileged few access participatory spaces and that spatially, those with formal participation access do not reside in the poorer areas of cities that have water, housing, sanitation and service needs. Together with these human development and well-being challenges, Oldfield (2008, p. 493) has observed that as a consequence of the post-Apartheid institutionalised participatory mechanisms, since 1998 there has been

> "less effort and initiative by the state to 'go out and get' communities to participate. Instead, the imperative is on communities to come to the state's space and process."

This reflects a general practice attitude by the state to participation that abdicates responsibility for proactive engagement with its citizens and a shift of the duty for participation onto the citizenry. In response to these challenges, this research proposes that the CA, with its strong human development focus, is a useful theoretical framework for a practice conceptualization of the public participation process and the socially derived sustainability considerations at hand. The CA has a long tradition of emphasising the political and dialogic foundations for establishing a notion of 'the good' on grounds of a minimal conception of justice. The potential application of the CA extends beyond the role of facilitation envisioned by the EIAMS. It includes the theoretical conceptualization of deliberation and discourse framing, to the rules for participation, to the legitimacy of decisions made and most importantly, to the integration of stakeholders' values and actions into decision making.

This research is cognisant that the capabilities approach to environmental assessment decision making presented here is not an all-encompassing theory for EA or for public participation. It is one aspect of the suite of knowledge and experience that a practitioner would find useful. Cherp (2007) identifies five core modules for the EA practitioner education at a Masters degree level. The fifth module is "Organisational behaviour and public decision making" (Cherp, 2007, p. 62). The research targets contributing towards this knowledge area of the EA practice.

2.3 SOUTH AFRICAN ENVIRONMENTAL LAW AND PUBLIC PARTICIPATION

This section introduces the legal provisions for public participation in environmental assessment in South Africa. This is done in order to contextualise the EA case studies that are investigated in this research. The discussion focuses on the legal provisions for participatory environmental assessment followed by the requirements to uphold human and environmental rights under these provisions.

2.3.1 LEGAL PROVISIONS FOR PUBLIC PARTICIPATION IN ENVIRONMENTAL ASSESSMENT IN SOUTH AFRICA

South Africa is party to over 50 international conventions which are directly or indirectly relevant to the environment (Glazewski, 2005). The national environmental regulations that directly relate to the cases selected for this research are established by the South African Bill of Rights (RSA, Act No. 108 of 1996). Of the proliferation of environmental legislation enacted in South Africa since 1996, the three most relevant articles of environmental law regarding public participation in EA are the National Environmental Management Act (RSA, Act No. 107 of 1998), commonly known as the NEMA, the Promotion of Administrative Justice Act (RSA, Act No. 3 of 2000), or PAJA; and the Promotion of Access to Information Act (RSA, Act No. 2 of 2000), commonly known as the PAIA. The NEMA, the PAJA and the PAIA specify public participation principles and minimum standards. They are to be read together with other relevant environmental legislation and regulations and are to be interpreted according to the Bill of Rights established in the Constitution of South Africa (RSA, Act No. 108 of 1996).

The formulation and promulgation of environmental law in South Africa has been influenced by international developments such as the National Environmental Policy Act (NEPA, Act No. 42 of 1969) of the United States. Likewise the regulations under the NEMA have also been influenced by international and best practice guidelines and international conventions such as the Stockholm Declaration of 1972, the Rio Summit of 1992 and the Aarhus Convention on Access to Information which is also known as the convention on Public Participation and Access to Justice in Environmental Matters (UNECE, 1998a).

The apartheid system was designed to exclude the majority of South Africans from political participation. This meant that the government developed administrative, legal and social structures that prevented people from participating in highly centralised and secretive decisions affecting their lives (Sowman *et al.,* 1995). Since the inception of the democratic elections, South Africa now has a more robust policy based on international best practice. Despite the endeavour for redress however the socio-economic disparities within South Africa still reflect the segregation policies of the

apartheid era; in some cases spatially entrenched deprivations have worsened (Wright and Noble, 2012).

The effectiveness of the EIA regulations and practice in South Africa have been challenged by academics and politicians on both procedural and substantive grounds (Sandham *et al.*, 2008; DEA, 2014). The Western Cape Provincial Department of Environmental Affairs and Development Planning (DEA&DP, 2011) prepared a guideline for South Africa which establishes that public participation is always required in both Basic Assessments and full EIAs and sets out the procedure to follow when notifying interested and affected parties. The guideline on public participation provides a minimal definition for public participation, articulated as "a process by which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to, an application" (DEA&DP, 2011, p. 6). This does not provide for the emerging best practice public participation tenants of dialogue, discussion, debate and deliberation. The verb 'comment' does not necessarily imply any real impact on outcomes. Rather, it implies a vulnerability to a practice attitude of keeping the stakeholders at a manageable distance from the real decision making. It reflects a legal compliance or checklist approach to public participation that can fall short of best practice tenets of 'meaningful' and 'effective' participation.

Section 33 of the Constitution of South Africa (RSA, Act No. 108 of 1996) promotes administrative justice and reinforces the role of public participation in environmental governance. Together with the PAJA, the 'Just Administrative Action' clause of the Bill of Rights provides that:

1) Everyone has the right to administrative action that is lawful, reasonable and procedurally fair.
2) Everyone whose rights have been adversely affected by administrative action has the right to be given written reasons.

Procedural fairness is thereby fundamental to environmental decision making and the NEMA needs to be interpreted together with the PAJA. Furthermore, the inclusion of reason giving is important regarding the duty of providing rational evidence for decisions. The provision of reason giving is central to the practice of environmental assessment as *ex-ante* decision making is predicated on good reasons being provided for decisions made. This applies to all levels of decision making and at all stages of the EA process. The PAIA reinforces the practice of environmental assessment in South Africa. It works together with the NEMA and PAJA in order to "give effect to the constitutional right of access to any information held by the state and any information that is held by another person and that is required for the exercise or the protection of any rights" (Glazewski, 2005, p. 77).

2.3.2 HUMAN AND ENVIRONMENTAL RIGHTS IN THE NEMA

This section focuses on selected aspects of the environmental right expressed in the Constitution (RSA, Act No. 108 of 1996) in order to elaborate aspects of public participation and of human well-being which relate to capabilities. The inclusion of an environmental clause in the Bill of Rights chapter of the South African Constitution laid the foundation for the development of environmental law jurisprudence in South Africa (Glazewski, 2005). du Plessis (2008) has cautioned that despite the provision of fundamental rights, some fundamental rights may be worthless when not guaranteeing a means of formal participation by right-holders in their implementation. Section 24(b) of the Constitution of South Africa (RSA, Act No. 108 of 1996) requires positive action on the part of the government in this regard by means of "reasonable legislative measures". This implies entitlement to and the need for public participation in environmental decision making at all levels. Section 24 of the Constitution of South Africa states:

> Everyone has the right –
> a) To an environment that is not harmful to their health or well-being; and
> b) To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that –
> i. Prevent pollution and ecological degradation;
> ii. Promote conservation; and
> iii. Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

This environmental clause in the Bill of Rights reflects characteristics of both fundamental rights and socio-economic rights. It reflects developments in international jurisprudence regarding recognition of a fundamental constitutional right to a quality environment (May and Daly, 2009). Courts that are required to vindicate this constitutional environmental right are faced with a number of challenges. They need to establish a workable meaning of 'environment'. They need to clarify questions regarding standing and whether claims are justiciable. They further need to create corrective solutions that are strong enough to be effective, and yet within the court's authority and legitimacy (May and Daly, 2009).

A broad interpretation of *locus standi* is implied in the environmental right by 'everyone', and is clarified by Section 38 to include:

> a) Anyone acting as a member of, or in the interest of, a group or class of persons;
> b) Anyone acting in the public interest; and
> c) An association acting in the interests of its members.

Glazewski (2005) highlights that the 'environment' in the environmental right is also to be broadly interpreted beyond ecological systems, although they are a core part of the environment, to include social and economic considerations including even cultural heritage and the urban environment. Glazewski (2005, p. 77) points out that well-being is potentially limitless and involves a "considerable measure of subjective import as it elevates the right beyond health but to an undefined

and undeterminable realm". On these grounds, the characterization of environmental considerations such as a 'sense of space' can potentially come under the ambit of morally responsible environmental use (Glazewski, 2005). As problematic as this may be for the practitioner, it is important that the practice of environmental assessment recognises this legal foundation.

'Strong sustainability' is based on the "realisation that the economic, social and ecological systems are embedded and interdependent open systems" (Gerber, 2009, p. 3). Much of the ecologically orientated discourse in the environmental assessment literature in South Africa has focused on how to define 'justifiable' development as it is viewed from an ecological perspective. This is an appropriate discussion when applying the precautionary principle. However, this thesis proposes that, in conjunction with such precautionary considerations, the NEMA here uses the term 'promotion of' justifiable development in the proactive sense not merely a tolerance of, or acceptance in subordination to, narrowly defined ecological interests. This tension in the practice has been repeatedly politicised in South Africa and resulted in a dichotomous discourse of 'environment versus development', rather than the NEMA intention of 'promoting justifiable development'. President Thabo Mbeki blamed delays resulting from the environmental assessment procedures for "a quite considerable slowing down of economic activity" (Patel, 2008, p. 360). Similarly, the substantial backlog in housing provision resulted in the Minister of Housing, Lindiwe Sisulu, challenging the EA practice saying:

> We cannot forever be held hostage by butterfly eggs that have been laid, because environmentalists would care about those things that are important for the preservation of the environment, while we sit around and wait for them to conclude the environmental studies (Patel, 2008, p. 360).

The environmental clause in the Bill of Rights implies that decision making that adequately attains to the legal demands of sustainability requires a balance of ecological, economic and social considerations. Further, it provides codified examples of how to interpret subjective propositions of 'well-being'. It is both protective against harm but also positively legislates for the facilitation of sustainable development. Glazewski (2005) points out that consideration of ecological preservation in the South African context needs to be balanced with other socio-economic rights such as the right to housing, the right to health care, food, water and social security. South African jurisprudence has subsequently established that "in line with international law, the environment is a composite right, which includes social, economic and cultural considerations in order to ultimately result in a balanced environment" (Glazewski, 2005, p. 81).

Patel (2008) observes that the environmental right in the Constitution of South Africa has increased the prominence of human rights in environmental and planning decision making. However, she critically highlights that "despite this commitment, evidence exists that demonstrates that processes of marginalisation, poverty, environmental degradation and a lack of sustainable outcomes

remain; and what is more, are entrenched by the very processes aiming to address them" (Patel, 2008, p. 360). This observation lays a foundational motivation for the inclusion of stakeholder capabilities in environmental assessment where the human well-being considerations cannot be ignored or compromised.

An outworking of the social considerations of the environmental right affect both the definition of the environment as well as the environmental context within which project-affected persons are situated. The following selected clauses in the NEMA (RSA, Act No. 107 of 1998) attempt to redress the participation challenges that would be faced by stakeholders facing historical injustices.

> Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human well-being must be pursued and special measures may be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination (RSA Act No. 107 of 1998, Section 2(4) d).
>
> … all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation … [in EA] (RSA Act No. 107 of 1998, Section 2(4) f).
>
> Decisions must take into account the interests, needs and values of all interested and affected parties, and this includes recognising all forms of knowledge, including traditional and ordinary knowledge (RSA Act No. 107 of 1998 Section 2(4) g).
>
> The vital role of women and youth […] must be recognised and their full participation therein must be promoted (RSA Act No. 107 of 1998, Section 2(4) q).

These clauses in the NEMA apply the principle of justice as it concerns stakeholder abilities, their well-being and their opportunities for participation in light of historical injustices. In light of severe disparity and significant historical disadvantage within South African society, there is an emphasis on equality and fairness. In this regard, these clauses reflect a post-Apartheid optimism for the redress of historical inequalities through the practice of EA and the platform of public participation. The clauses recognise that certain groups in society may need supplementary support in order to realise equitable and effective participation. There is an expectation in these clauses that specific responsibility should be taken for mitigating inequitable situations faced by stakeholders who cannot effectively participate, specifically due to particular social arrangements. van der Berg (2015, p. 4) highlights the need for appropriate support and affirms that "the realisation of socio-economic rights – often through the medium of administrative law – is a critical prerequisite for the transformation of South African society".

Oldfield (2008, p. 493) has observed however that although these advances in regulatory and constitutional provisions for participation create opportunities for participation in what are ostensibly equal processes, "allocating much weight to them as mechanisms for democratisation ignores the grossly unequal possibilities for participating, the formal methods of participation, and the often personalised […] agendas that drive these processes in practice". The differences of individual ability and opportunity faced by stakeholders are distributed unequally even for a hypothetical process that

provides for equal participation access. Processes are not equal to each other and vary over time and space. Further, the allocation of weights accorded to issues raised by stakeholders are not necessarily treated with equal consideration by the assessment practitioner nor the final decision maker; even in the hypothetical case of equal participation. These challenges highlight the practical realities for potentially achieving equitable participation. The South African public participation guideline acknowledges that:

> Marginalised individuals and communities should be provided with improved access to integrated environmental management systems and processes. One of the measures of successful public participation is the ability of people to influence decisions and outcomes. In EIA processes, for example, the degrees of influence or power of individual stakeholders depends on having time to attend meetings, the ability to understand and review lengthy technical documents, access to the internet, and knowledge of environmental rights (DEA&DP, 2007, p. 53).

Taken together with the NEMA clauses listed above, the guideline identifies a number of particular types of disadvantage for both individuals and groups of people. Section 2(4) d in the NEMA identifies the disadvantage of racial discrimination. Beyond the disadvantage of discrimination, the guidelines also include aspects that relate to structural disadvantage. Marginalised groups such as 'women and youth' are identified in Section 2(4) q. The potential hegemonic disadvantage that can result from conflict between different types of knowledge is also highlighted in Section 2(4) g.

The NEMA and the guidelines also include aspects that relate to procedural disadvantage. Section 2(4) f demands that "all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation". This clause reflects the egalitarian intentions of legislators in post-Apartheid South Africa of 1998. However, it also presents significant challenges to the practice. Participation is rarely this meaningful. Very rarely are cases presented that satisfy the imperative of Section 2(4) f; the 'achievement' of 'equitable and effective' participation. Time constraints are limited to 30-day comment windows. Disparity in understanding, skills and capacity amongst stakeholders are the norm and rarely accommodated for. The Department of Environmental Affairs (DEA) (2014b, p. 53) acknowledges that "challenges to citizen participation are exacerbated for disadvantaged groups and communities who have limited education and skills, and lack financial and other resources. Such groups tend to be uncertain about their rights and responsibilities, and lack access to decision making, follow-up monitoring and compliance actions".

While guidance on the level of public participation is given by the DEA (2014), it is not prescriptive of form or rigour of participation. The DEA guideline assumes due diligence on the part of the environmental practitioner regarding their justification for the types of participation employed and deemed, by the practitioner, to be appropriate. The DEA&DP (2011) checklist establishes the minimum requirements for reporting of the public participation process. However, beyond the checklist, it is not able to adequately establish how effective the problem solving or deliberation

process was. No metric or measure for adequacy is provided regarding 'equitable' and 'effectiveness' criteria implied by Section 2(4) f. The views of those who are not able to adequately articulate their values or opinions can easily be under or misrepresented. As useful as the DEA (2014) and DEA&DP (2011) guidelines are for the emerging practice, when compared with the literature on effective participation, the minimum requirements they encode are insufficient for establishing the requisite stakeholder support for the demands of 'effective' and 'equitable' participation.

2.4 CONCEPTIONS OF JUSTICE IN PUBLIC PARTICIPATION

This section outlines conceptions of justice in environmental assessment with the purpose of illustrating fairness and equality in participation as a foundational expression of justice in EA decision making tools. Patel (2008) has observed that appraisals must be able to take into account the distributional consequences of environmental impacts. This is particularly important for those groups in society that "tend to systematically lose out in the distribution of environmental goods and bads" (Patel, 2008, p. 363). It is assumed that the weaknesses of the technocentric approach to EA can be addressed through approaches grounded in participation, deliberation and mediation or consensus seeking (Connelly and Richardson, 2005).

Normative expectations of justice and fairness underpin the practice of public participation in EA and have led to their inclusion in environmental law. Morrison-Saunders and Early (2008, p. 29) identify that 'natural justice' and effectiveness in public participation, although related in legal terms, are not necessarily the same. They identify two principles of public participation in EIA. Firstly, that the decision maker should operate with independence, and secondly, that interested and affected parties have the opportunity to be heard. Laws (1996, p. 65) concurs that public participation in EA should be a "practice of fairness" where "public decisions should be acceptable to the people who will be affected by them". This forms a minimal conception of environmental justice and, as their work showed, is usually legally grounded upon administrative justice terms.

Numerous cases have illustrated that EIAs in Canada have "failed to live up to the three principles of all environmental assessments: comprehensiveness, fairness and rigour" (Booth and Skelton, 2011, p. 52). A number of authors have considered both equity (Renn *et al.*, 1995; Petts, 2003) and effectiveness (Rowe and Frewer, 2000; Palerm, 2010) in participation as important evaluative criteria. Webler (1995, p. 46) combines fairness and competence together with the communication evaluative criteria of Habermas' 'Ideal Speech Situation'. Jiirgen Habermas has diagnosed the current problematic of modern societies as one-sided and uneven rationalisation. He argues that using multiple forms of rationality in a collaborative way is the most important kind of rationality: what he calls "communicative rationality" (Habermas, 1987, p. 95). He believes that:

> We should not expect a generally valid answer when we ask what is good for me, or good for us, or good for them; we must rather ask: what is equally good for all? (Habermas, 1987, p. 248)

This premise well informs the decision making evaluation of participation procedures from the unit of dialogue and communication. It affirms, "the public interest can never be pre-established, but is constructed in and through democratic public debate" (Sandercock and Dovey, 2002, p. 152). Patel (2008) has characterized South African environmental decision making to face similar challenges to those implied by Habermas. Patel (2008, p. 370) argues that there is a need for practitioners to be guided by ethical judgements and values, and suggests the need for ensuring that "all practitioners understand the justice and distributive implications of the values that they hold, and in turn shape decision making in exercising judgements to ensure that outcomes are just". In order for this to happen, Patel (2008, p. 370) argues that practitioners need to be in a position to "reflect the diverse values and needs of the communities with whom they are working and not be constrained by the narrow set of values embodied in the tools used for decision making".

The capabilities scholar Laws (1996) agrees with Webler's (1995) and Habermas' (1987; 1996; 2003) emphases on communication. He argues that minimum practice of participation requires:

> Providing broad opportunities for participation and ground rules that do not limit the parties' interaction. Participants need to be able to ask questions, offer evidence, set and amend agendas, make proposals, offer arguments in support of them, and question proposals made by others. (Laws, 1996, p. 65).

He illustrates that the imperative of fairness in public decision making can only be achieved through discussion. Laws (1996, p. 65) underscores that when parties "get the chance to influence outcomes through negotiation, their efforts will be enhanced if they can find a way to talk clearly about their interests and creatively about how to meet them". After extolling the merits of dialogue in participation, Laws connects what he considers best practice participation with three characteristics of participation fairness: trust, thinking outside ourselves and mutual respect. Section 2.7.1 elaborates how these three characteristics are included in the capabilities approach and are useful for the evaluation of public participation.

Substandard public participation has been demonstrated by Rauschmayer and Wittmer (2004) and Sinclair *et al.* (2012) in cases where efficiency has been valued more than effectiveness. These critiques however have not adequately considered the differential and realisable opportunities, or constraints, that individual stakeholders may face in participation. A contextually appropriate understanding of unjust participatory situations faced by certain stakeholders is easier to theorise about than empirically observe or compare. Enserink *et al.* (2009) consider performance indicators for public participation and identify that best practice principles should be not only procedurally fair; but also ethically justifiable. They illustrate how the theoretical and empirical indicator criteria they develop cover a broad and relevant range of generic participation aspects classified under the

subthemes of good governance and good decision making. In their classification, inclusive and equitable participation is a characteristic of good decision making. They see this most immediately with regard to two fairness criteria regarding intergenerational considerations and those between interested and affected parties.

This literature review has established that effective and equitable participation is considered important for both good governance (du Plessis, 2008) and for good decision making (Enserink *et al.*, 2009). This research relies on the criteria proposed by Enserink *et al.* (2009) for operationalizing good governance and good decisions through participation. The following chapter elaborates how the evaluation of the cases considers the good governance aspects of participation proposed by Enserink *et al.* (2009). Participation processes in the cases are evaluated to the extent that they are: cooperative, well adapted to context, adaptive and communicative, informative and proactive, inclusive and equitable, educative and imputable (Enserink *et al.*, 2009, p. 3). The value of the capabilities focus for these types of criteria illuminates the importance of considering the capabilities of the individual stakeholder in the decision making process for an improved practice.

2.5 THE CAPABILITIES APPROACH

The capability approach is a wide-ranging normative framework for the appraisal of individual well-being and social arrangements. It can be used to assess aspects of an individual's or groups' well-being, such as inequality or poverty (Robeyns, 2006). The innovative focus of the CA has appealed to scholars from a number of fields due to its relevance for the moral evaluation of social arrangements that goes beyond conventional development discourses. Robeyns (2006) illustrates that in general, the CA has been applied to welfare economics, development studies and political philosophy as well as education, disability studies, public health and gender studies. The CA has focused on a number of areas which have varying degrees of relevance to environmental decision making such as inclusive political institutions (Sen, 1999b), civic engagement in a functioning democracy (Drydyk, 2005), citizen participation and environmental risk (Foriono, 1990), participatory governance of sustainable transitions (Rauschmayer *et al.*, 2013), gendered participation (McEwan, 2005), rationality and public decision making (Sen, 2002), quality of life (Sen, 1979; Nussbaum and Sen, 1993), justice (Gotoh and Dumouchel, 2009; Sen, 2009), women and social justice (Nussbaum, 2000c), the right to information and local governance (Anand, 2011), and equality and democratic societies (Sen, 1988; Sen, 1992).

The capability approach in practice comes in an assortment of forms. This is partly due to the wide scope of the approach, but also because the method is radically underspecified. This has been both a strength and a limitation of the approach. The degree of specification is contingent in part on

the type of theory (for example, a theory of justice, or a theory of welfare economics), or the kind of use (for example, a appraisal of existing social practices, or a measurement exercise). It can also depend on particular normative and epistemological assumptions (Robeyns, 2006). Robeyns (2008) identified that three theoretical specifications have emerged from the literature as predominantly important: the choice between functionings and capabilities, the selection of appropriate capabilities, and the issue of weighting the dissimilar capabilities for a general assessment (this also known as the question of indexing or trade-offs). By focusing on capabilities rather than functionings, one is not imposing a particular notion of the good life, but instead aiming at providing a range of possible ways of living. Thus, the liberal nature of the capability approach, or an anti-paternalism consideration, motivates this principled choice for capabilities. This research draws on each of Robeyns' (2008) three specifications in the application of a capabilities approach to environmental assessment. The will be elaborated further in the methodology chapter with their operationalization relevance.

2.5.1 THE CAPABILITIES APPROACH: FOUNDATIONAL CONCEPTS

This section introduces the capabilities approach. It first outlines three foundational concepts of the approach namely, 'capabilities', 'functionings' and capability 'sufficiency'. It then elaborates how these core concepts can be applied for evaluative purposes through the use of further CA concepts of 'capability expansion', 'ceilings' and 'thresholds'. Following this, the discussion highlights the role of public participation within the CA and illustrates recent developments within the approach that have afforded the workability of a sustainability orientated capabilities approach. The discussion then highlights relevant capabilities research in South Africa. The section concludes with an outline of a capability approach to public participation in environmental assessment.

2.5.1.1 FOUNDATIONAL CONCEPTS OF THE CA: 'CAPABILITIES'

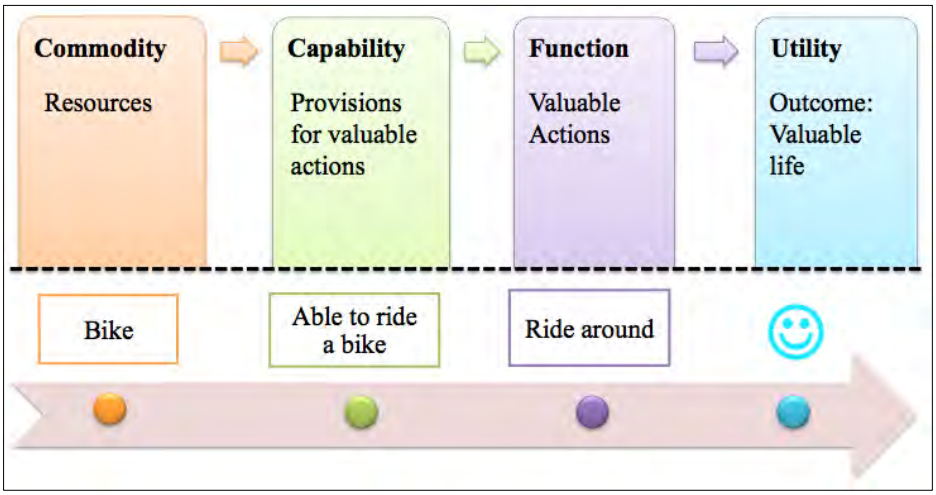
For the past forty-five years, Amartya Sen has argued that development cannot be achieved through economic improvement alone (for example Sen, 1973; Sen, 2013). In the 1970s, he identified that multiple dimensions of social, political and cultural aspects need to be taken into account (Sen, 1976). The approach influenced more nuanced evaluations of development based on the livelihood assets that an individual possesses (Sen, 1979). This brought into consideration the multiple dimensions of capital such as financial capital, human capital, physical capital, social capital and natural capital. These assets are considered from the approach as the foundations upon which an individual is able to build a good life for him or herself (Sen, 1988). The CA thereby broadened the definition of 'development' to include human well-being, with a focus on the individual and presupposing that everyone is equal and is entitled to a 'good' life (Sen, 1987a).

Sen (1999b, p. 12) has considered 'freedom' as both the "means and the end" towards which development should be orientated. From his roots as an economist, he has argued that inequalities of income and of outcome are less important than equality of fundamental freedoms (Sen, 1979). The term 'capability' is used to describe a "person's ability to do valuable acts or reach valuable states of being" (Sen, 1990, p. 12). This would empower that person with the opportunities or freedoms "to achieve what an individual reflectively considers valuable" (Sen, 1990, p. 19). A CA definition of poverty would, therefore, be defined as an "objective curtailment of a person's 'capabilities'; of her capacity and freedom to choose and to act" (Sen, 2000, p. 52). Robeyns (2006, p. 351) has identified that:

> The core claim of the capability approach is that assessments of the well-being or quality of life of a person, […] should not primarily focus on resources, or on peoples' mental states, but on the effective opportunities that people have to lead the lives they have reason to value.

Capabilities can be seen to be the essential fulcrum between material resources and human achievements. There are two core concepts to the CA; a person's 'functionings' and a person's 'capabilities' (Robeyns, 2016, p. 9). A person's 'functionings' are seen by the CA as that person's 'beings and doings', for example, their literacy level or a healthy and adequate diet. Their 'capabilities' are conceptualised as the genuine opportunities, or freedoms an individual has to realise such 'functionings'. In this sense, capabilities are not only abilities (Sen, 2000). Commodities are the accessible goods, services or other resources available to people. Sen sees the utility of such commodities in light of their purpose for people. Therefore, different people and societies differ in their capacity to convert income and commodities into valuable achievements (Sen, 1999b). A capability is, therefore, a kind of freedom to choose various lifestyles that are realistically achievable, if so desired. Figure 3 below illustrates a conceptualisation of 'capabilities' and 'functionings'.

Figure 3: CA concepts of 'Capabilities' and 'Functionings' (after Clark, 2005, p. 1344)



As Figure 3 demonstrates, Sen makes a clear distinction in the analytical space between the utilitarian concepts of 'commodities' and 'utility' with the CA concepts of 'capabilities' and 'functionings'. It is the focus on 'capabilities' that distinguishes the CA from other types of analysis such as basic needs, happiness or income (Sen, 1988). Sen (1999b) illustrates that difference in age, gender, special talents, disability, and "proneness to illness, can make two different persons have quite divergent opportunities" and quality of life "even when they share exactly the same commodity bundle" (or resource conditions). As similar commodity bundles are not commonly distributed in populations, the complexity of what can initially look like a simple framework becomes more apparent. Sen identifies at least five distinct sources of variation in a person's ability to effectively convert commodities:

1) Personal heterogeneities
2) Environmental diversities
3) Variations in social climate
4) Differences in relational perspectives
5) Distributions within a family (Sen, 1999b, p. 71).

The realities of such differences in commodity conversions have led Sen to consider that the Rawlsian utilitarian proposition (Rawls, 1971) for distributed provision of primary goods (namely rights, liberties, opportunities, income and wealth and a social basis of self-respect) as useful, yet insufficient. Sen is more concerned about what is feasible for an individual to achieve when cognisance is taken of her or his circumstance. In this regard, Sen's capability approach is committed to both basic liberties as well as distributive justice (Sen, 2014).

Fennell (2013) identifies Nussbaum's (2011a, p. 23) terms of 'combined capabilities' and 'internal capabilities' in order to discuss an individual's capabilities. 'Combined capabilities' are the substantial freedoms that reflect the sum of opportunities an individual has for choice and action in her particular political, social and economic situation (Fennell, 2013). These are analysed in this research through a discussion of the 'opportunities' and 'constraints' to stakeholder capabilities. 'Internal capabilities' are those characteristics of a person such as personality traits, intellectual and emotional capacities, internalised learning, and skills of perception and movement (Fennell, 2013). These are analysed through a discussion of the 'ability' considerations of stakeholder capabilities.

The assessment of well-being can be categorised according to two distinctions. The first is a partition between the progression of a person's agency as expressed in their goals, "those goals that a person has reason to adopt" (Sen, 1993, p. 35) on the one hand, and a person's well-being on the other. The second distinction is between achievement and freedom to achieve. When combined, these distinctions provide four 'concepts of advantage'. The actual functioning that a person realises is called the person's 'achievement' or 'achieved functionings'. Functionings will be elaborated in the following section. Sen has forcefully argued that establishing a person's wellbeing should not only

focus on the particular functioning she actually realises, but also on the things that she can achieve (Sen, 1992). The set of all potential vectors of functionings, or capabilities, that a person can attain is called the 'capability set'. This research focuses on the functionings and capabilities that can be observed.

In contrast to orthodox utilitarianism, which ultimately reduces the concept of well-being to a lone category ('utility', defined in terms of some mental condition, such as pleasure, happiness or desire), Sen's framework can comfortably accommodate a broader range of objects that make a good life (Sen, 1992). Well-being is defined in terms of functionings or states of a person, which make it feasible to differentiate between distinctive categories (such as, mental and physical states). The CA can therefore handle multifaceted notions of utility by treating different mental states as examples of valuable functionings. In stark contrast, utilitarianism inclines to conflate utility with a single mental state (such as happiness or desire) and disregards non-hedonistic objectives. Sen has emphasised the significance of basic physical functionings such as being sufficiently nourished, being in good health and avoiding premature death. He has also pointed to the value of some more sophisticated social achievements such as self-respect and taking part in the life of the community. The CA may turn out to be just as susceptible as utility to the problem of adaptive preferences and cultural indoctrination (Nussbaum, 1988; Sumner, 1996). This is a very real concern. The available evidence from South Africa, however, suggests that adaptation and indoctrination have not generally distorted response to questions about the selection and value of capabilities (Clark, 2002; Clark and Qizilbash, 2002; 2005; Qizilbash and Clark, 2005). In practice, a diverse range of complex social and mental functionings such as being happy, relaxing, having friends and an active social life, achieving self-respect, being fashionable and possessing status make a significant contribution to a good life style. The research therefore focuses on functionings and capabilities rather than utility.

2.5.1.2 FOUNDATIONAL CONCEPTS OF THE CA: 'FUNCTIONINGS'

'Functionings' are the subjective end states of well-being or happiness that are realized by people through the utilisation of commodities and capabilities. Using this framework Sen holds that the focus of policy and research should be on capabilities that increase people's freedoms rather than those of conventional approaches such as the basic needs, welfarism or utilitarianism. Sen (1999b, p. 75) clarifies that "while the combination of a person's functionings reflects her actual achievements, the capability set reflects her freedom to achieve: the alternative functioning combinations from which this person can choose". The real value in a set of options is in the best use that can be made of them. The outcomes evaluation of the CA means therefore that capabilities can, to a certain extent, be

judged by functionings. The autonomy and potentials a free person ought to have do not limit capabilities to a prescribed set of functionings.

Where a number of capabilities act together to describe a 'set of real opportunities' these are conceptualised as a 'capability set' (Robeyns, 2006). Beyond only considering capabilities as singular and stand-alone provisions, they are considered within a group (or 'set') of provisions for valuable actions. This research considers specific and singular capabilities in its analysis but also considers the 'capability set' for participant opportunities in EA decision making. The face value expectation for meaningful or effective participation would presuppose that a group of mutually reinforcing capabilities would necessitate their combined provision of freedoms. This focus on capabilities and capability sets provides a useful analysis of potential democratic deficits where the provision of opportunities is restricted by the absence or under performance of a particular capability. This is evidenced clearly when a capability set is missing a key capability to make up its complement (Dreze and Sen, 2007).

In the same way, a 'functioning n-tuple' describes the combination of doings and beings ('functionings') to form a valued way of life. Beyond considering functionings as singular and stand-alone actions they are considered within an individual's group of valuable and accessible actions. Where a particular function is deficient, absent or restricted then the entire n-tuple can be likewise affected. A stand-alone function could be a written comment on an EIA report. However, meaningful participation involves much more than mere submitted comments. It could, in a particular instance, involve a combination of written comments, debate, discussion, reflection, learning, collaboration and representation on behalf of others. A 'functioning n-tuple' does not have to be predetermined. Rather it is considered emergent and adaptable to context, reflecting its appropriate fit to the selected decision making process.

Applied to EA, it is proposed here that where such a combination of participation actions occurs together, built upon the provisions of a corresponding participation capability set, the stakeholder is afforded the full complement of rights and actions to meaningfully participate. Where the decision making process hinges on certain proportional inputs of stakeholder functionings, incorporation of stakeholder values, preferences and issues, then the balance of functionings need to be conceptualised as a group. This makes the CA concept of a 'functioning n-tuple' a very useful concept for considering public participation in EA decision making as it attempts to capture the range of actions taken by a participant to achieve meaningful ends while reflecting on the provisions for such actions.

2.5.1.3 FOUNDATIONAL CONCEPTS OF THE CA: JUSTICE, FREEDOM AND CAPABILITY 'SUFFICIENCY'

Nielsen and Axelsen (2016, p. 3) have established the term "capabilitarian sufficiency" to describe the state of an individual for whom there is no capability deficit. Sen holds that development regarding a certain capability (for example a broad interpretation of *locus standi*) without development in an associated capability (for example provisions for equitable and inclusive political or economic institutions) negates the sustained freedoms that could be achieved from the former (Sen, 1997a; Acemoglu and Robinson, 2002).

Achieved functionings are an important focus of the CA as they indicate the successful pursuit of what is considered meaningful. However, Anand *et al.* (2009, p. 120) caution "a focus on achieved functionings alone, like a focus on utility, is incomplete". The evaluation needs to include the freedom to decide what path to take. This emphasises genuine choice. If these freedoms are absent, or withheld from a group of people, the CA considers them as 'unfreedoms' with a negative impact on capabilities and freedoms. Sen (1999b, p. 3) clarifies:

> Development requires the removal of major sources of 'unfreedoms': poverty as well as tyranny, poor economic opportunities as well as systematic social deprivation, neglect of public facilities as well as intolerance or overactivity of repressive states.

Within a functioning democracy, the focus on capabilities provides a useful insight into the participation instance because the analysis is grounded upon identifying, for the purpose of removal or reduction of, 'unfreedoms'. The empirical work of this research contextually identifies stakeholder 'capabilities' and 'functionings' and reflects upon both the freedoms that positively enhance an individual's capabilities as well as 'unfreedoms', which constrain a participant's capabilities within which they are environmentally situated. In *The Idea of Justice*, Sen (2009) contends that in light of the current scale and distribution of development challenges facing the world today, the removal of unjust arrangements in societies should be the main focus of research and policy.

Evaluating participatory and governance aspects, Smith (2015, p. 5) found the employment of the CA as a fitting metric for the evaluation of the "delivery of justice" as it provides a clearer vision of how to rectify a critical failure of democratic governance. At an individual level, Pick and Hietanen (2014) have identified that psychosocial barriers can limit functionings and capability development. They explain how external barriers to development can become fatalistic internal barriers that impede an individual's agency. Under such conditions, they explain how individuals in less developed countries, such a Mexico, can find it more comfortable and practical to continue being a subject rather than an agent of change. They explain that this "makes it easier to adopt such barriers than to expand one's functionings and capabilities and thus become an agent of change" (Pick and Hietanen, 2014, p. 16). These types of unfreedoms are explored in the research as they relate to a stakeholder's agency in EA public participation.

The emergence of the CA has not been without its critics. The workability of the CA was an immediate concern for Rawls due to the imperfect measurement of capabilities (Pogge and Pogge, 2002). Qizilbash (2002) identified that capabilities can be adaptive in ways similar to preferences and values leading to confusion regarding their stability as generalizable concepts. Deneulin (2008) highlights that although important, freedom is not the only relevant value people hold. In addition, Robeyns (2006) does not see the CA as a comprehensive ethical theory. These are useful observations of the approach. Such critiques however can lead to a misinterpretation of the purpose, operation and applicability of the approach. Sen (2009) has elaborated that the CA is a comparative concept of justice that is to be constructed on value judgements. He is clear that the comparative nature of the approach, which Ballet *et al.* (2013) describe as "between descriptive and normative", is intended to be interpreted on objective grounds that are reasoned between citizens.

Evans (2002) and Stewart (2005) have criticized the CA as being too individualistic. In response, Ibrahim (2006) proposed the concept of 'collective capabilities'. Sen however rejects the primacy of the concept of 'collective capabilities' and argues that the capabilities resulting from collective action still remain as "socially dependent individual capabilities" (Sen, 2014, p. 4). The CA adheres to what Robeyns (2006, p. 3) calls "ethical individualism" or as Nussbaum (1992, p. 210) puts it - the "principle of each person as an end" in themselves. Sen sees the balance resting on the individual (Evans, 2002).

Without digressing into this interesting individual-agency versus collective-agency debate within the CA, this research defers to Sen's (2002, p. 84) concept of "socially dependent individual capabilities" as a notion for stakeholder collaboration "instances of non-individual agency" that speaks to provisions for valuable individual actions (Leßmann and Rauschmayer, 2013, p. 109). A vast literature exists in the CA regarding the potentials for collective agency but there is current debate regarding the merits of departing from the Senian focus on the individual (Fukuda-Parr, 2003). It is unfortunately beyond the scope of this research to further the discussion on collective capabilities. It is however hoped that subsequent research would build on the merits that can be gained from the tensions between Sen's 'orthodox' CA position and those of Ibrahim (2006) and others. The concept of 'socially dependent individual functionings' is adopted for stakeholder collaboration within participation instances of 'non-individual agency' that indicate valuable individual actions and states of being.

Sen goes to great lengths in his work to emphasise the value of public participation and civic engagement (Runyan *et al.*, 2015). He highlights the importance of public deliberation for verifying a contextual application of knowledge and values (Sen, 2009). He identifies the limitations of scientific input in decision making relying on Hillary Putnam's (2002) observation that facts and values become entangled in modern discourses and deliberations (Sen, 2009). Ballet *et al.* (2013) identify that Sen

distinguishes here between values and norms. The CA evaluative judgement is not a prescriptive judgement. It is therefore not intended to be a complete ethical theory. Ballet *et al.* (2013) further explain that the CA evaluative judgement is value-based, whereas a prescriptive judgement is norm-based. The strength of Sen's CA for public participation is in the evaluation of relatively unjust arrangements. These are arrangements that are identified through reasonable discussion and argument between citizens. Rather than prescribing a normative or perfectly just participation institution, the CA recognises that the diversity and the difference of individual and contextual situations require an appreciation of differential conversion factors within a population as a consequence of institutions and decisions which are all imperfect.

For reason-giving in deliberation Sen proposes that the most practical use for the approach is the use of Scanlon's (1998; 2014) demands for impartiality and fairness. Equity issues that are applied with capabilities in focus are therefore to be grounded on principles that satisfy "what others could not reasonably reject" (Scanlon, 1998, p. 22). The application of the participation thresholds to be presented in the theoretical framework of this research need to be defendable within their context on grounds of such reason giving and public scrutiny for equality in participation.

EA shares the idea that an institution needs to cope with the plurality of the publics and the diversity of the stakeholders involved in the process (Audouin and de Wet, 2012). It also recognises the difficulties faced regarding the inclusion of values within participatory decision making (J. Brown, 2009). As discussed already, principles of the practice have evolved to try and incorporate sensitivity to disadvantaged groups. There are established theoretical frameworks for public participation in environmental assessment (for example Arnstein, 1969; Collins and Ison, 2006; Everatt *et al.*, 2010). The capabilities focus proposed here intends to supplement these frameworks with an ethically defensible means of identifying the reasonable grounds for what can be considered to entail meaningful participation. The equity and effectiveness considerations demand that the CA evaluation of public participation considers the individual ability considerations of the stakeholder. Procedurally the CA highlights the necessary provision for realisable opportunities for the individual stakeholder. It highlights the unjust obstacles that individuals might face which require mitigation. It further highlights the role of reason and reciprocated reasonableness in the participatory process when identifying agreeably unjust obstacles. The participatory focus of the research emphasises the potential for decision shaping by stakeholders and decision support for stakeholders to participate meaningfully in environmental assessment. The following section elaborates how capability concepts of 'thresholds' and 'ceilings' provide useful theoretical tools for the identification of the capability situations of participants.

2.5.2 CAPABILITY THRESHOLDS AND CEILINGS

Martha Nussbaum (2000c, p. 75) has developed the CA to include the identification of a level of human life, below which no human life should live, as a "partial theory of justice". In effect, it is the identification of a minimum level of capability that a society can agree upon. A 'capability threshold' is a standard for distributive justice that should be secured for all citizens belonging to a decent political order (Roberts, 2013). In order to achieve this, Nussbaum (2003) offers a list of ten central capabilities that are based on what she considers potentially generalizable minimum foundations for living a truly human and flourishing life. Her list of capabilities consist of: 1) life, 2) bodily health, 3) bodily integrity, 4) senses, imagination and thought, 5) emotions, 6) practical reason, 7) affiliation, 8) other species, 9) play and 10) control over one's a) political and b) material environments. Each of these ten capabilities is well elaborated in her approach as they relate to fundamental human rights and are proposed as complementary with each other (Nussbaum, 1992; 2000b; 2000c; 2003; 2004; 2006a; 2009; 2011a; 2011b; 2013b; 2013c).

A myriad lists of human capabilities and needs have recently emerged in the well-being and development literature (see Saith, 2001; Alkire, 2002a; and Clark, 2002). Many of these lists are intended to be universal. Lists are invented to capture agreement between diverse cultures and societies regarding the fundamental components of a good life (for example, Nussbaum, 1995; 2000). Yet such accounts are subject to criticism on the grounds they are objectionably paternalistic or overlook cultural and historical differences. One way of reducing the risk of imposing ethnocentric or elitist views on other people and societies includes drawing on the values and experiences of the poor (for example, Clark, 2003). There is no assurance, however, that such an approach will produce meaningful results. In some places, the poor may also lack the necessary knowledge and experience to make informed value judgements about alternative lifestyles.

Working with rural women in Malawi, Greco *et al.* (2015) found six different spheres of well-being: physical strength, inner well-being, household well-being, community relations, economic security and happiness. The essential criteria that construct these spheres considerably overlap with Nussbaum's (2003) and other proposed CA lists (for example Clark, 2003; Clark and Fennell, 2014). Their work shows that capabilities emerge to be not only shaped by the realisation of basic material needs such as being sufficiently nourished and adequately sheltered, but are also highly dependent on complex feelings, relations and social norms.

Working with rural Namibians, Collomb *et al.* (2012) found that quality of life is perceived as a combination of basic needs (wealth, health, education), happiness and a set of overarching contexts (economic, social, political and infrastructural). Their analysis found valid links between subjective and objective well-being measures. Their work led them to propose a methodology that captures wellbeing's multidimensionality, linking subjective and objective assessments; that reflects local

preferences; improves upon existing measures, and can be used to quantitatively assess rural development interventions. Their measure of wellbeing (MWI) is locally adapted to the rural context of the Caprivi region in Namibia and has potential as a tool to help different stakeholders involved in rural development projects.

The cumulative of evidence presented by Clark (2003), Greco *et al.* (2015) and Collomb *et al.* (2012) motivates this research to build on their empirical philosophy in the African context and extend the capabilities approach to the practice of environmental assessment in South Africa.

A particular capability on the list proposed by Nussbaum (2003, p. 41) is "the control of political and material activities that affect one's life". She has conceptualised it within a meta-frame of 'control of one's environment' and considers the political acts individuals take as instrumental towards the end of increased freedom within that person's environment. This research applies this Nussbaumian capability to public participation. The term 'control' implies a degree of agency that is beyond the basic expectation of EA public participation in South Africa. It implies a degree of citizen and stakeholder influence in decision making that goes beyond merely being informed about a proposed development. It implies a degree of citizen influence and involvement. This suggests a level of engagement with decision making that is meaningful. It also implies reflection of the future environment that a stakeholder considers valuable. This research uses Nussbaum's definition of 'political' activities in a broad sense and includes the political act of public participation as conceptualised within the EA literature by Cashmore *et al.* (2004) and from planning literature by Forester (2006).

Particular capabilities are not stand-alone facets of life but fit together with other capabilities to form a capability set. For example, Nussbaum (2003, p. 41) identifies 'reflection' as an aspect of her capability of 'practical reason'. This is a key supporting capability for an outworking of participating in political activities that affect one's life. It informs the reasons one has for justifying the values and associated actions that a person chooses.

Nussbaum's list is proposed here as useful both for participation in general, but also in terms of capability considerations for the practice of EA. An example of this is the way her formulation of capabilities align with the four principles of the International Labour Organization's (ILO, 1998) Declaration of Fundamental Principles and Rights at Work:

a) Freedom of association and the effective recognition of the right to collective bargaining;
b) The elimination of all forms of forced or compulsory labour;
c) The effective abolition of child labour; and
d) The elimination of discrimination in respect of employment and occupation (quoted in Kemp and Vanclay, 2013, p. 88).

Although Sen abstains from prescribing a list of capabilities, for the purpose of illustration and empirical testing, this research uses Nussbaum's political participation capability as a means to illustrate the capability opportunities, ability and constraints an individual has in EA public participation. The purpose of this research is not to prescribe Nussbaum's formulation as universal participation capabilities, but rather, through application, to operationalize and test the general use of the theory. At face value, Nussbaum's participation orientated capability can be interpreted in EA as the stakeholder's 'freedom to participate in the decisions that affect their future environment', should they choose to do so. The implication of such a freedom would necessitate an evaluation of the process considering the realistic opportunities that an individual has to influence decision making as well as the reasons they have for choosing to participate. The justice considerations would thereby imply what capability related arrangements facilitate their participation in a way that guards against, or possibly overcomes, unjust scenarios for a stakeholder's equitable participation.

2.5.3 APPLYING CAPABILITY THRESHOLDS, AND CEILINGS TO CAPABILITY EXPANSION

Although there are different levels of severity of capability deprivation that can be identified (Clark and Fennell, 2014), the threshold adopted for this research is Nussbaum (2006b, p. 26) 'upper' threshold, below which a person may "go on living but it is a life unworthy of the dignity of a human being". The justice consideration for citizens, within a plural society, is realistically not to ask for the characteristics of a perfect society, but to ask themselves "what makes for a minimally just society?" (Nussbaum, 2011b, p. 77). Nussbaum (2011b, p. 74) is clear that a threshold needs to be interpreted contextually and that "each nation specifies each capability in its own way". Despite the potentially varied interpretation of threshold specifications and characteristics, Nussbaum argues that it is the responsibility of the respective governments to meet capability requirements and respond appropriately to capability failure.

Holland (2008) identifies that capability expansion should not be limitless as boundless expansion may not result in benevolent outcomes. In a well-argued discussion of the Rawlsian (Rawls, 2001) and Nussbaumian formulations of justice, Holland (2008) identifies that limitless exercise of certain capabilities could lead to the curtailment of other capabilities. In doing so, Holland (2008, p. 415) develops Nussbaum's idea of the 'tragic question' illustrating how "it is not possible to push one capability above the threshold that justice requires without simultaneously pushing another capability below a threshold that justice requires". Holland (2008, p. 401) therefore proposes a complementary concept of 'capability ceilings' that "impose a limit on the set of basic opportunities available to people" in order to safeguard capability protection for each person. For example, an unreasonably expanded capability of free speech could result in hate speech if not curtailed by an

associated limitation on free speech that includes the justice considerations of capabilities of affiliation and dignity regarding one's fellow citizen.

Nussbaum has elaborated that such dignity would include the Rawlsian formulation of reasonableness as "fair reciprocation" (Nussbaum, 2015, p. 15). Further, she has identified that public and judicial deliberation processes should determine the reordering of practices required for removing of "tragic trade-offs" (Nussbaum, 2000c, p. 1027). Environmental assessment can gain from both of these two philosophical advances.

This research does not take capability ceilings to impose restrictions of *locus standi* opportunity (Salomons and Hoberg, 2014). Sen (1987b; 1997a; 2009) perennially cites Adam Smith's (1984) 'impartial spectator' as a better standard for decision making than the parochial interests of those most directly affected. This literature review has established that both the capabilities approach and best practice environmental assessment advocate for a broad interpretation of *locus standi*. This is further elaborated in Sections 2.5.4 and 2.7.1. Rather, capability ceilings should delimit what is reasonable opportunity for those who are within the ambit of those who are interested and potentially affected by a proposal. Together with opportunity considerations, this research advocates that capability ceilings and thresholds should be used to determine what a reasonable and fair mitigation of participation obstacles would entail. Reflecting on the findings of the research, Chapter 5 elaborates this idea with an emergent theoretical framework that proposes the potential workability of using thresholds and ceilings as a means for identification of grounds for sufficient public participation.

2.5.4 THE CAPABILITIES APPROACH AND PUBLIC PARTICIPATION

There is potential scope for exploring the theoretical and practical benefit that can be gained for EA public participation in considering how participation has been approached and conceptualised in other fields. The potential value that the CA holds for EA is the realized meaningful participation and greater consideration of human well-being consequences of environmental impacts. A focus on human capabilities can provide an informed perspective of the feedback between the expansion, or contraction, of human freedoms as a consequence of environmental impacts, together with how those impacts feedback on capabilities (Peeters *et al.*, 2014).

Sen goes to great lengths in his work to emphasise the value of public participation and civic engagement (Runyan *et al.*, 2015). Participation is also seen as an expression of agency and as having intrinsic value.

> Participation also has intrinsic value for the quality of life. Indeed being able to do something not only for oneself but also for other members of the society is one of the elementary freedoms which people have reason to value (Sen, 1998, p. 106).

To list a few examples for each, existing research has demonstrated how the CA can be applied to evaluations that consider stakeholders influencing decisions through participatory civic engagement (Drydyk, 2005), enhancing democratic capacity through participation (Drydyk, 2010), participation and social learning (Lanzi, 2004), participation and empowerment (Drydyk, 2013), participation of marginalised persons (Masset and White, 2004), local knowledge constructions in participation (Gigler, 2005), public constructed and value-based knowledge (Mooney, 2005), rational participatory public testing of information (Sen, 2002), imperatives of participation for legitimacy (Masset and White, 2004), conflict resolution through participation (Hill, 2007) as well as reflective decision making through participation (Nussbaum, 2013a). The CA can provide an appropriate conceptual point-of-reference for integrating considerations of impacts on people and impacts on the environment which are traditionally dealt with through the activation of structured EA procedures. Embedding the tenets of the capability approach in EA decision making enhances the consideration of individuals' aspirations and values in relation to transformations of the environment which involve identifiable consequences for current and future generations; at the same time, they provide concrete evaluative tools for assessing what human capabilities such transformations enhance or put at danger.

2.5.5 A SUSTAINABILITY ORIENTATED CAPABILITIES APPROACH

EA is a decision making tool that is intended to contribute towards sustainability (Jay *et al.*, 2007). It is, therefore, important to establish the sustainability grounds of the CA for the consilience project intended in this research.

Recent work has proposed the workability and benefits of integrating ecological dimensions in the capability approach (Adrangi *et al.*, 2004; Burger and Christen, 2011; Gutwald *et al.*, 2011; Crabtree, 2012; Polishchuk and Rauschmayer, 2012; Ballet *et al.*, 2013; Crabtree, 2013; Griewald and Rauschmayer, 2013; Leßmann and Rauschmayer, 2013; Pelenc *et al.*, 2013; Rauschmayer *et al.*, 2013; Rauschmayer and Leßmann, 2013; Gutwald *et al.*, 2014; Pelenc and Ballet, 2015; Rauschmayer *et al.*, 2015). In their review of the literature, Schultz *et al.* (2013) highlight that such integration is essential for the approach to extend the justice foundations of the approach to areas of sustainability and decision making that would positively affect future generations. Polishchuk and Rauschmayer (2012) highlight that real freedom includes the availability of resources (environmental assets), but also social institutions and individual skills to convert these resources into capabilities. Voget-Kleschin (2014) has purported that, in light of current consumption patterns, intra and

intergenerational justice can be measured by assessing capability sets, instead of using subjective metrics such as pleasure or happiness.

After exploring the merits of a number of rival frameworks, Page (2007) argues that in light of the demands of ecological spaces, the currency of 'capabilities to function' provides a promising basis for a theory of justice that takes the rights and duties of intergenerational justice seriously. What has proven problematic however is the definition of what exactly are the dimensions of a valuable human life, if they have dimensions that might be measurable, and if so what thresholds could be applied to their measurement (Page, 2007).

Alkire (2005) appraises subjective quantitative measures of human agency at the individual level. Her review focuses on the metric and measurement of capabilities relevant to the methodological operationalization of capabilities used in this research. Alkire (2005) observes that prior studies in subjective quantitative human agency include large-scale cross-cultural psychological studies of self-direction, of autonomy, of self-efficacy, and of self-determination. Such studies and approaches have largely developed along an independent academic path from the economic development and poverty reduction literature. Alkire (2005) argues that such studies may be useful in crafting appropriate indicators of individual empowerment or human agency. This is the approach of this research. Surveys are designed to supplement and augment quantitative information regarding human development and well-being.

Alkire (2005) recommends subjective studies in human agency should have several identifying characteristics. First, they should reflect the internal experience of the respondent – including their own judgements and values about how well they are functioning. Second, they may include positive as well as negative experiences. Third, they should focus on enduring evaluations rather than fleeting emotional states. Chapter Three elaborates how these three characteristics are incorporated into the methodology.

Pelenc *et al.* (2013) identify three aspects of the capability approach that have historically proven deficient with regard to sustainability. Firstly, they identify the historically weak ecological dimension of the approach. They overcome this by devising a theoretical framework for the integration of intrinsic and instrumental values of nature. This has been rapidly taken up and applied widely in the approach (Omann and Rauschmayer, 2011; Griewald and Rauschmayer, 2013; Leßmann and Rauschmayer, 2013; Sen, 2013; Rauschmayer *et al.*, 2015).

Secondly, the approach was initially driven by Sen's (1988) former insistence on a consequentialist viewpoint (i.e. *ex-post* responsibility) with regard to the environment. Pelenc *et al.* (2013) propose Sen's (1988) restrictive *ex-post* view can be extended by adding the *ex-ante* dimension of responsibility. Sen (2013) has since adjusted his position to include an *ex-ante*

dimension of responsibility. This research builds upon both of these extensions to the CA by including intrinsic and instrumental dimensions of the ecological science involved in EA. EIA and SEA are *ex-ante* decision making tools that fit well with this theoretical advance within the CA. These tools provide examples of the type of practice for taking responsibility that such a theory of justice would demand.

The third historical shortcoming of the CA that Pelenc *et al.* (2013) identify is the relationship between individual and collective levels. To a lesser extent, this research includes a distinction between individual and collective agency in evaluation. Integrating these three dimensions of the emerging capabilities approach in the evaluation processes of EA has great potential to contribute exemplar cases that further and establish a sustainability-orientated capabilities approach. Pelenc *et al.* (2013, p. 91) conclude that a capability approach that includes a strong sustainability perspective is one that requires development that:

> guarantees both present and future generations an improvement of their capabilities that takes into account the active contribution of each human being to habitat conservation and the right of each to benefit from essential ecosystem services, through the aspiration to equity on the one hand — by the intra-generational distribution of these capabilities — and their transmission across generations on the other.

In subsequent research Pelenc and Ballet (2015) have demonstrated that the capability approach constitutes a relevant framework for analysing the multiple links between human well-being and critical natural capital. They demonstrate how the accord between "critical natural capital and the capability approach can form both the normative basis and the informational basis for a deliberative approach to human development which embraces a strong sustainability perspective" (Pelenc and Ballet, 2015, p. 36). Their case study demonstrates the workability of using a deliberative process for the identification of ecosystem services and their contribution to the well-being of the local population for a controversial land-planning project located in the centre of Fontainebleau, France. The work of Pelenc and Ballet (2015) is a landmark case which motivates for the consideration of capabilities in environmental assessment. Such application can open up possible avenues of research towards a deliberative approach that implements projects from a strong sustainability perspective.

Voget-Kleschin (2013, p. 483) has addressed the questions regarding "if and how far" the capability approach can be employed in developing a conception of sustainable development. Sen (2009, pp. 248–252) has argued that sustainability should not primarily focus on sustaining a particular environment or 'state of nature' as such, but should value environmental conditions according to the opportunities they offer to people. At face value, his may be a difficult position for ecologically trained scientists to appreciate. Furthermore, he argues that the idea of 'development as freedom' demands reformulating the idea of sustainable development in consequence (Sen, 2013). This would necessitate that sustainable development not be reduced to an evaluation of needs

satisfaction or economic growth (Polishchuk and Rauschmayer, 2012). It also requires that the consideration of 'sustainable development' not be reduced to a particular stream of scientific training.

Nussbaum (2011b, p. 163) deals with the matter of sustainable development under the heading of 'environmental quality'. She claims that this "vital issue has been extensively addressed in liberal political theory (for example, by Rawls), but the Capabilities Approach has not yet exhaustively pursued the topic" (Nussbaum, 2011b, p. 163). Beyond the imperatives of environmental quality implied by Nussbaum, Voget-Kleschin (2013) identifies two advances from within the CA that have afforded the incorporation of sustainability into the CA. The first is considerations of intergenerational justice and the associated temporal dynamics (Page, 2007; Gutwald *et al.*, 2011; Gutwald *et al.*, 2014). The second advance considers elaborating the influence of nature, natural resources and ecosystem services on the capability set (Griewald and Rauschmayer, 2013; Pelenc *et al.*, 2013; Schultz *et al.*, 2013; Peeters *et al.*, 2014; Kolinjivadi *et al.*, 2015; Pelenc and Ballet, 2015).

Gutwald *et al.* (2014) have furthered the workability of a sustainability fitting capabilities approach. Building on the work of Sen (2009), they propose capabilities to be a workable metric of justice, the metric being capabilities not just particular goods. Gutwald *et al.* (2014) argue along Senian lines that grounding the scope of capabilities upon the philosophical models of Rawls (1971; 1999; 2001) and Scanlon (1998; 2014) provide the necessary starting point for capability identification and selection. Accordingly the principle of justice, or its distributive aspect, would mean making decisions for an equitable distribution of capabilities. Schultz *et al.* (2013) highlight the quandary that to achieve a decent quality of life for contemporary humans potentially threatens the possibilities to achieve a decent quality of life for future humans. Applying distributional considerations intergenerationally leads to a re-interpretation of the Brundtland Commission definition of sustainable development. A capabilities interpretation would reframe it to, "development that meets the *capability* needs of the present generation without compromising the *capabilities* of future generations to meet their own *capability* needs" (Leßmann and Rauschmayer, 2013, p. 220)

Rauschmayer *et al.* (2015) have observed that governance of transitions to future states of sustainability requires a combination of systems, targets, and transformative knowledge referring to individual, group, and societal levels. In response, they propose, despite the empirical challenges of a perfect measurement or metric, individual capabilities can be used as a normative check for changes over time.

Figure 4: Transition management and capabilities as normative checks governing sustainability transitions (Rauschmayer *et al.*, 2015, p. 218)

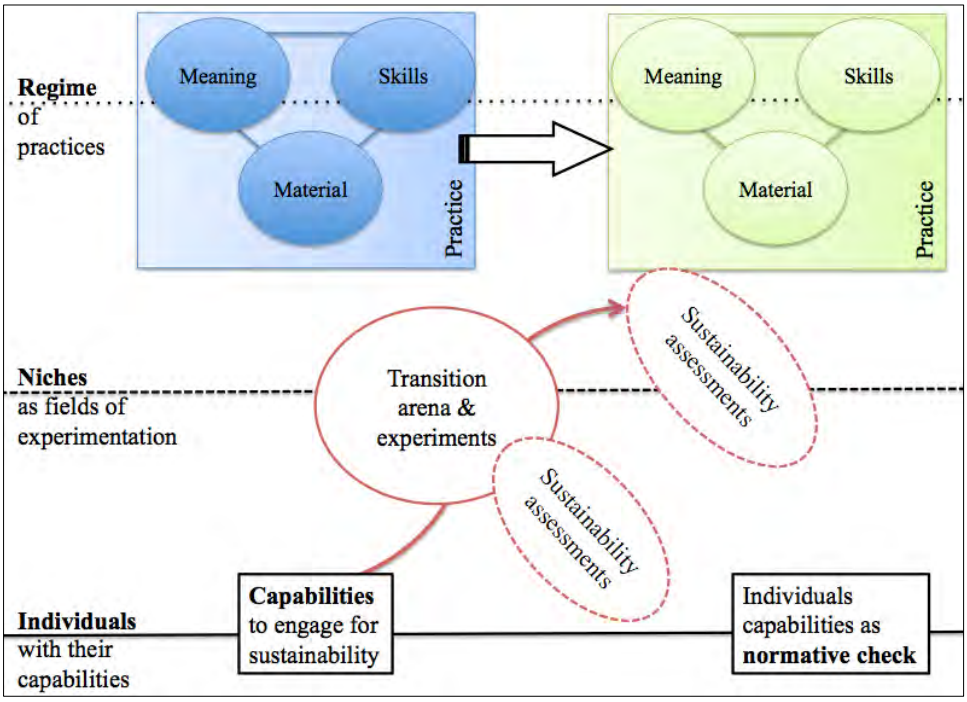


Figure 4 presents the suggestion by Rauschmayer *et al.* (2015, p. 218) that sustainability can be assessed by how transitions affect individual capabilities; that capabilities themselves are proposed as the normative check for sustainability. It is important to note that their use of the term sustainability assessment in Figure 4 is not the same as that commonly understood in the field of impact assessment. They simply conceptualise how sustainable a particular experimental change or transition has been. The parallel for the practice of SEA and EIA is clearly similar. Their conceptualization considers multiple levels of governance from the individual to that of the regime. The blue 'practice set' of 'meaning, skills and material' is hypothetically passed through time into a future scenario (indicated in green). The metric employed to check the sustainability of that transition is proposed to be individual capabilities.

Building on the work of Rauschmayer *et al.* (2015) both the focus on individual capabilities and the *ex-ante* considerations of change over time are incorporated into the theoretical development of this research (Chapter 5). Importantly, Rauschmayer *et al.* (2015, p. 218) highlight in their diagram the capabilities to "engage" for sustainability and the critical role social learning plays between transition points. This implies a degree of active and reflective participation by citizens in the normative evaluation of sustainability states. Considered from a project level, a natural forum for such engagement can be through EA public participation processes. Due to the project level temporal and spatial constraints of their case study research, observations of the wider niche or general regime observations that Rauschmayer *et al.* (2015) include in their framework are limited.

2.6 CAPABILITIES RESEARCH IN SOUTH AFRICA

The CA has been applied to the South African context in recent studies that have mainly focused on poverty, gender and education (Klassen, 2000; Qizilbash, 2002; Clark, 2003; Unterhalter, 2003; Clark, 2005; Noble *et al.*, 2006; Unterhalter, 2007; Wright and Noble, 2012; Conradie and Robeyns, 2013). This South African CA discourse reflects the approach's human development roots and is largely limited to socio-economic and education considerations.

The work of Clark (2003; 2005) provides a foundational baseline for this research. Conducting surveys in two settlements in the Western Cape of South Africa, Clark identified how ordinary people in South Africa view development and human well-being in both a rural village and an urban township. He found that the capability approach overlaps with both utility (happiness and pleasure) and resource-based concepts of well-being. Most significantly his work found that most "ordinary" South African people in their survey "appear to share a common vision of development, which is not fundamentally at odds with most of the capabilities advocated by scholars like Nussbaum and Sen" (Clark, 2003, p. 173). Section 3.4 of the methodology chapter elaborates the operationalization of Clark's list but for the purpose here it is important to highlight that Clark identified what he called a normative list of 'functional capabilities' based on the South African communities he worked with (Clark, 2003, p. 180). Clark's ranking is presented in Table 3 below.

Table 3: Clark (2003, p. 180) 'functional capabilities' normatively ranked

1)	Jobs	14)	Sexual satisfaction	28)	Electricity
2)	Access to clean water and sanitation	15)	Basic clothing	29)	Free time/recreation
3)	Housing and shelter	16)	Fashionable clothing	30)	Having children
4)	Family and friends	17)	Freedom for self-determination	31)	Watching TV/going to the cinema
5)	Personal safety and physical security	18)	Income and wealth	32)	Drinking alcohol
		19)	Consumer durable and luxury goods	33)	Living long
6)	An education	20)	Self-respect	34)	Smoking cigarettes
7)	Happiness	21)	Land and cattle	35)	Property rights (the right to own personal property)
8)	Good health	22)	Living in a clean and natural environment		
9)	Sleep and rest			36)	Equal opportunities for personal advancement
10)	Fuel for cooking and heating	23)	Coca-Cola (or other fizzy drink)		
11)	Access to family planning	24)	Transportation	37)	Determination, motivation, self-reliance
12)	Exercise	25)	All weather roads		
13)	Capacity to think, reason and make choices	26)	Watching sport	38)	Participate in political activities that affect your life.
		27)	Playing sport		

Clark (2005, p. 1341) found that their surveys suggest, "Most people would probably endorse most (if not all) of the capabilities advocated by Sen and Nussbaum". Clark's findings form a very important baseline for considering the valued capabilities in the case studies investigated in this research. Particularly his work provides a baseline that can be tested according to the selection and hierarchy of functional capabilities. This testing is important for the purpose of verification and stability of capability distribution in the sample populations as well as indicating the priority capabilities that stakeholders value highly. The examples presented in Table 3 above are not

exhaustive. Nor is it likely that all people would want to endorse them. In fact, some respondents advanced well-defined reasons for not valuing Coca-Cola, alcohol and advertising, among other things. The fact that substantial numbers of people often value these things, however, implies that any practical framework must be able to handle them.

A list and hierarchy of valued capabilities indicated in empirical research may vary significantly from those proposed by scholars. The hierarchy is best understood together with the reasons people provide for valuing the capabilities they prioritise. For example, Clark's ranking of 'drinking fizzy drinks like Coca-Cola' at '23', above 'electricity' at '28', would be highly contested by scholars aspiring to establish a more generalizable list and hierarchy. However, Sen's insistence that capability identification and prioritisation should not be an imposed or top-down process demands a thorough exploration of the contextual and local values. This is most evident regarding capabilities that are endowed with both intrinsic and instrumental values and at fluctuating degrees of importance over time.

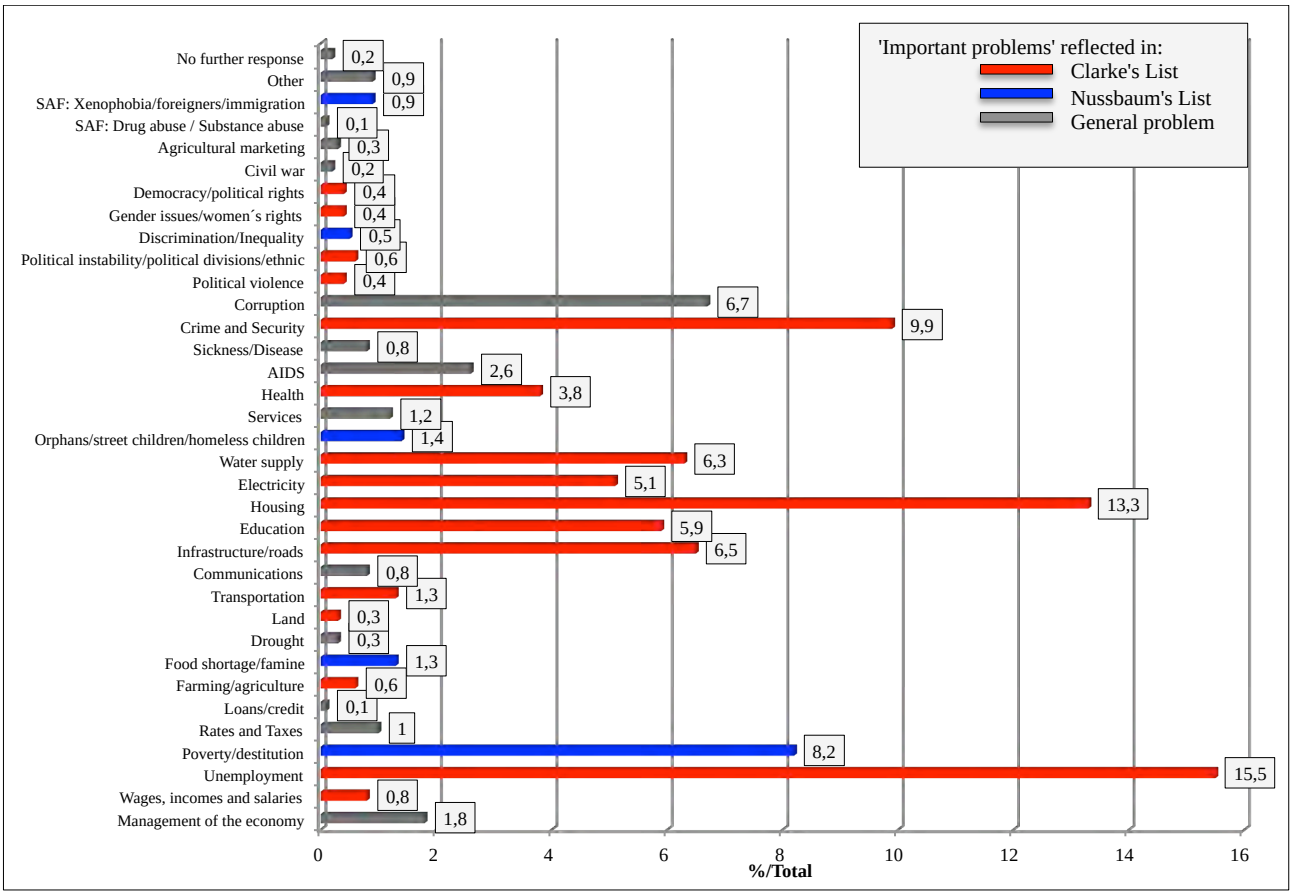
As public participation in EA is conceptualised by this research as fulfilling both intrinsic and instrumental roles for the stakeholder this is an important observation. Clark's (2003) framing of South African 'functional capabilities' is discussed in more detail in Sections 3.4 and 3.5 with regard to operationalization and respondent ranking of 'priority functional capabilities'.

With a focus on women's agency and aspirations, the work of Conradie and Robeyns (2013) in the impoverished informal settlement of Khayelitsha, Cape Town, found that none of the voiced aspirations of the women that Conradie had worked with fell outside Nussbaum's list. They highlight five of Nussbaum's capabilities of bodily integrity, affiliation, imagination and thought, practical reason and political participation and choice to be "deeply valued" in light of the women's aspirations together with material rights of their own house and to have jobs (Conradie and Robeyns, 2013, p. 572). Conradie and Robeyns' (2013) findings contrast and contradict the low prioritisation of 'property rights' in the findings of Clark (2003). This difference indicates that the research agenda of establishing a more generalizable list of capabilities for South Africa is still in its early stages regarding capability identification as well as attributed value. It also highlights the need for further research that could verify lists proposed by scholars through further empirical investigations in multiple contexts.

More recent work has corroborated many of the functional capabilities of Clark's list and adds weight to Clark's (2003; 2005) motivations that Nussbaum's list is generally applicable to South African values. The Afrobarometer (Afrobarometer-Data, 2016) has recently completed its sixth round of representative surveys in 27 African countries. It includes 100 questions on democracy and governance. Although Clark's list covers a wider range of values, reflected in the functional

capabilities, the imperatives of development and problem solving which would meet the needs of the current generation are well reflected in the AfroBarometer responses in Figure 5 below.

Figure 5: Survey responses to 'The most important problems facing South Africa today' (Afrobarometer-Data, 2016)



In an indirect way of signifying values, and in order to present a general impression of the concerns of South African society, the survey included questions that focused on problems facing South Africa and which respondents consider important. The available results from Round 5 (2011-2013) found the following responses to the question: "What are the most important problems facing South Africa today". Figure 5 indicates that in the opinion of the respondents, the most important problems facing South Africa today include a number of issues which reflect the values and priorities on Clark's (2003) list of functional capabilities. It is important for the practitioner and the decision maker to have an understanding of the values and issues that are top-of-mind for those citizens who become stakeholders in EA as they may not necessarily align with those of the EAP or the decision maker. It has already been established in Section 2.2.3 that both Lawrence (2003) and Audouin and de Wet (2012) have cautioned the practice of EA in this regard. These EA authors highlight the importance of practitioners being reflective regarding their own values as well as sensitive to the requirements of a value plural decision making practice.

The two highest indicated problems are unemployment and housing. Poverty, crime and security are also considered significant problems facing the country. Basic services of water supply, electricity, transport and infrastructure are highlighted together with concerns with the quality and accessibility of education and health provision. A wage income, land and farming reflect concern over livelihood productivity. To a lesser extent, substantive issues are raised with concern over democratic and political rights, gender issues, and political tensions.

There are five criteria within the ambit of Nussbaum's list, but which are not included on Clark's list, that are highlighted in the survey responses of Figure 5. They include 'poverty and destitution', 'orphans', 'discrimination', 'food shortage' and 'xenophobia' as indicated problems facing the country. In general, 'corruption', 'communications' (including internet access), 'management of the economy' and 'HIV/AIDS', which are not specified on either CA list, are indicated to also be important issues. These issues highlight the human well-being considerations of what imperatives should be considered important to South Africans.

This research considered the level of concern in these identified problems to reflect the types of values that stakeholders may bring, together with their worldview, to an environmental assessment. The development imperatives they imply would influence the balance of considerations and weighting they place on issues that are grounded in social values.

2.7 OUTLINING A CAPABILITY APPROACH TO PUBLIC PARTICIPATION IN EA

This section synthesises the key concepts of public participation in environmental assessment and those of the capabilities approach. It elaborates the concepts of the CA, presented earlier in this literature review, as they relate to public participation in environmental assessment. The discussion highlights the shared normative foundations of the capabilities approach and those of public participation. The purpose of this synthesis is to introduce the reader to merits of the potential consilience of the two disciplines. This synthesis provides a theoretical foundation for the research methodology and analysis. The consilience is grounded upon the conceptions of justice within the comparative disciplines and is technically operationalized as they relate to stakeholder ability, opportunity and the removal of obstacles to public participation. It elaborates how the CA notion of 'expansion of capabilities' is a useful conceptualization of an individual's actions and decision making motivations within an environmental assessment process.

2.7.1 SHARED PUBLIC PARTICIPATION PRINCIPLES OF THE CA AND EA

There are a number of foundational participatory principles that are shared between the CA and EA. Although they are yet to directly affect each other, these principles are posited with the intention of advocating for consilience between the two disciplines with foci on justice and participation. This is not proposed as an exhaustive list but as a means to demonstrate the potential equity foundations of the two disciplines.

Table 4 below displays the normative agreement regarding public participation and its instrumental nature for achieving better decisions. Each shared normative principle identified in the table below can strengthen and elaborate the consilience of the CA and EA based on criteria for fair decision making. The left column of Table 4 enumerates a number of selected best practice normative principles and expectations for participation in environmental assessment. This selected list does not aim to be comprehensive nor exhaustive. It serves an illustrative purpose of alignment. The left column of Table 4 presents selected normative practice principles of public participation. The first group of five aspects summarise best practice literature that establishes what public participation *can* achieve. The second group of eight aspects present the normative foundations for participation; what it *should* be founded upon. The third group of bulleted points, present characteristics of what public participation *may* require in order to be effective and meaningful.

Table 4: Shared normative public participation principles of the CA and of EA

Selected normative principles of public participation in environmental assessment	**Exemplar Capabilities Approach Literature**
Public participation *can*:	
1. Be instrumental for making better decisions (Vantanen and Marttunen, 2005).	1. (Sen, 1999b).
2. Be an end in itself regarding the outworking of a functioning democracy (Glucker *et al.*, 2013).	2. (Rauschmayer *et al.*, 2013).
3. Be a tool for accountability in environmental decision making (Zaharchenko and Goldenman, 2004; IFC, 2012).	3. (Kaldor, 2003; Smith, 2015).
4. Validate or challenge general theories of science through local and contextual application (Glucker *et al.*, 2013).	4. (Deneulin and Stewart, 2002)
5. Include other capacitating benefits such as social learning and empowerment (Doelle and Sinclair, 2006).	5. (Drydyk, 2013).
Public participation *should* be founded upon:	
1. A constitutional provision of rights for participation (du Plessis, 2008).	1. (Jaggar, 2006).
2. The right of access to information for affected parties (UNECE, 1998a).	2. (Anand, 2011).
3. An inclusive and broad definition of *locus standi* (Glazewski, 2005).	3. (Sen, 2009).
4. Participatory democratic principles and practices (Sinclair *et al.*, 2012).	4. (Drydyk, 2010).
5. Principles of justice and fairness in decision making procedure (Laws, 1996).	5. (Nussbaum, 1992; 2003; 2006b; Sen, 2006; Page, 2007; Srinivasan, 2007; Gotoh and Dumouchel, 2009; 2009; Kolinjivadi *et al.*, 2015; Nielsen and Axelsen, 2016).
6. Communication: involving such elements as dialogue, debate & deliberation (Webler *et al.*, 1995).	6. (Sen, 1977; 1987a; David Crocker, D., 2007; 2009).
7. Considerations of both values and facts (Taylor, 2007; Vugteveen *et al.*, 2010).	7. (Sen, 2013)
8. Equity considerations should be a fundamental element of impact assessment and development planning (Vanclay, 2006).	8. (Sen, 1979)
For more equitable participation to be achieved, it *may* require:	
• Capacity support for certain groups of interested parties.	• (Sen, 1990; David Crocker, A., 1992; Shanmugaratnam, 2001; Lanzi, 2004; Clark, 2005; Gaertner and Xu, 2006; Fernández-Baldor *et al.*, 2013; George, 2014).
• Overcoming historical social inequalities.	
• Special consideration for the involvement of vulnerable persons in society such as, but not limited to, women & children (IFC, 2012; Glucker *et al.*, 2013).	

The right column of Table 4 presents exemplar literature from the capabilities approach that advocate for characteristics of meaningful public participation that are reflected in norms of EA best practice. The following subsections discuss and elaborate the shared principles observed in Table 4 as an explication of the consilience of the two approaches.

2.7.1.1 SHARED PRACTICE PRINCIPLE 1: PUBLIC PARTICIPATION CAN BE INSTRUMENTAL FOR BETTER DECISION MAKING

Vantanen and Marttunen (2005) explain how participation in EA can be instrumental for making better decisions. In *Development as Freedom*, Sen (1999b) explains that the linkages between different types of freedom are empirical and causal. He explains that there is strong evidence that economic and political freedoms help to reinforce each other. Elaborating further, Sen (1999b) explains that his approach concentrates particularly on the roles and interconnections between certain crucial instrumental freedoms, comprising economic opportunities, political freedoms, social facilities, transparency guarantees and protective security. Each of these five instrumental freedoms are considered connected and as having instrumental potential for the increase in the freedoms people can achieve in their lives. The role of participation in EA is normatively intended to be instrumental for making better decisions and is considered by this research to align with the political freedoms of participating in decision making activities that affect one's life and the agency such activity generates for the individual.

The political freedoms that Sen's inclusive political institutions imply also relate to a number of encoded normative expectations for public participation in EA. du Plessis (2008) has cogently described how public participation is and should be founded upon national constitutional provisions which domestically encode best practice principles. Ideas of a broad and inclusive definition of *locus standi*, access to information and procedural justice are three codified examples of such provisions. The realisation of these provisions in the lives of an individual stakeholder provides the instrumental platform for their participation.

2.7.1.2 SHARED PRACTICE PRINCIPLE 2: PUBLIC PARTICIPATION CAN BE AN END IN ITSELF AS AN OUTWORKING OF A FUNCTIONING DEMOCRACY

Glucker *et al.* (2013) have identified that participation in EA can be an end in itself regarding the outworking of a functioning democracy. Likewise, Rauschmayer *et al.* (2013) describe how participation in EA should include participatory democratic principles and practices. Sen (1999a) has described the CA conceptualization of development as a process of expanding the real freedoms that people enjoy in relation to a functioning democracy. He explains further that the expansion of

freedom is correctly viewed as both, 1) the primary end (the constitutive role of freedom), and 2) the principle means (the instrumental role of freedom) of development (Sen, 1999b, p. 36).

Applying these concepts to environmental assessment would require a conceptualization of the participation process as both constitutive of freedom as well as instrumental in influencing the increase in future freedoms; or at least minimising the impact of negative situations that would result in unfreedoms. Such unfreedoms could both be caused by or result in unjust arrangements that restrict the choices people have to choose the kinds of lives that they consider valuable. The *ex-ante* intentions of EA decision making intend to provide for better decisions that would not negatively harm the environment. Ecological impacts are one ambit of the environment. Changes in ecological conditions have consequences for the choices and freedoms people have within their environment. These propositions are not alien to the EA practice. João *et al.* (2011) endorse Vanclay's (2006) argument that social impact assessment should go beyond the prevention or mitigation of negative impacts. Vanclay (2006) suggests that, wherever possible, opportunities should be taken to build social capital, build capacity, contribute towards good governance, encourage community engagement and foster social inclusion. These are proposed by this research as impact assessment examples of capability expansion. Further, Vanclay (2006) proposes that impact assessment needs to consider what is achieved, not just what is intended. This further highlights the close relationship between the empirical focus Sen (1990) proposes and the needs of the practice.

2.7.1.3 SHARED PRACTICE PRINCIPLE 3: PUBLIC PARTICIPATION CAN BE A TOOL FOR ACCOUNTABILITY IN ENVIRONMENTAL DECISION MAKING

International best practice guidelines and standards have established that public participation in EA can be a tool for accountability in environmental decision making (Zaharchenko and Goldenman, 2004; IFC, 2012). Before greater prominence was given to public participation, Foriono (1990) identified that the standard approach to defining and evaluating environmental risk tended to reflect technocratic rather than democratic values. Within the CA there is a long tradition of evaluating policies programmes and decision making from the perspective of public accountability (Kaldor, 2003; Smith, 2015). A particular form of such accountability is advocated through public participation and civic engagement (Dreze and Sen, 2007; Smith, 2015). A capabilities approach to EA does not need to be a form of direct democracy. Morrison-Saunders *et al.* (2014) have demonstrated the efficacy benefits of representative democratic decision making for EA. However, the fundamental entitlements which democracy brings about in the life of a citizen should provide the capability set to effectively and equitably engage with the EA decision making process in ways that are both instrumental and constitutive of their freedoms.

2.7.1.4 SHARED PRACTICE PRINCIPLE 4: PUBLIC PARTICIPATION CAN VALIDATE OR CHALLENGE GENERAL THEORIES OF SCIENCE THROUGH LOCAL AND CONTEXTUAL APPLICATION

Glucker *et al.* (2013) observe in the EA literature that public participation should be used to validate or challenge general theories of science through local and contextual application. This applies to both scientific and other types of knowledge including traditional knowledge and value systems. Taylor (2007) has argued that the disconnection that has resulted from the modern dichotomy between facts and values has left many decision making platforms bereft of considering both facts and values together in decision making. One of the central arguments of Sen's (2009) *Idea of Justice* centres on the notion that a robust evaluation that can be considered adequate for policy or decision making is one that is realisation-focused. He stresses that the real test of a theory is the justice it brings about in the world. This test needs to consider the accessible facts as well as the values and worldviews that people hold. An indictment of a poorly conceived policy or decision, by contrast, is one that brings about unforeseen and unjust arrangements in society. The purpose of environmental assessment is to uphold environmental justice in decision making and where practicable, provide a solution that would guard against unjust arrangements resulting from the negative impacts and consequences of projects. The human well-being focus of the CA further emphasises the importance of the testing of what is realized, not just assumed by 'experts', through public engagement and appropriate public input. In this regard, this research motivates that the testing of *ex-ante* decisions needs the type of human well-being perspective and an appropriate justice framework that is afforded in the capabilities approach.

2.7.1.5 SHARED PRACTICE PRINCIPLE 5: PUBLIC PARTICIPATION CAN INCLUDE OTHER CAPACITATING BENEFITS SUCH AS SOCIAL LEARNING AND EMPOWERMENT

Public participation in environmental assessment can include other capacitating benefits such as social learning and empowerment (Doelle and Sinclair, 2006). Sinclair *et al.* (2012) identify that the process should include aspects of communication and involve such elements as dialogue, debate & deliberation that may demand a capacitating of stakeholders to achieve the requisite capabilities for such participation. This is also reflected in the CA but with greater insight regarding agency and human well-being. Drydyk (2005; 2010; 2013) has identified that the capacitating benefits of participation and empowerment are not always obvious, nor are they immediately observable even in the rare situations where power is willingly shared. Goulet (1989, p. 283) identify that meaningful participation, or in his words 'optimal' participation, would allow people "to become agents, and not mere beneficiaries, of their own development".

2.7.2 SHARED NORMATIVE PRINCIPLES FOR EQUITABLE PUBLIC PARTICIPATION IN THE CA AND IN EA

EA best practice guidelines (IFC, 2012) and literature (Esteves and Barclay, 2012; Esteves *et al.,* 2012) have identified that capacity support and special consideration may be necessary for stakeholders facing particular disadvantage. In South Africa, the NEMA encodes the provision of support for stakeholders together with the purpose of realising equitable and effective participation:

> … all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation … [in EA] (RSA Act No. 107 of 1998, Section 2(4)f).

van der Berg (2015) illustrates how the capabilities approach can contribute to the development of a theoretical paradigm for the judicial review of State resource allocation decisions that impact on socio-economic rights. This research relies on the legal position established by van der Berg regarding the key linkages that exist between the capabilities theory and the characteristics of South Africa's project of transformative constitutionalism through the environmental right. Esteves *et al.* (2012, p. 40) identify that within the SIA community there is an established belief that "there should be an emphasis on enhancing the lives of vulnerable and disadvantaged people, and in particular, that there should be a specific focus on improving the lives of the worst-off members of society". With a focus on working conditions, health, labour, housing, child labour and the freedom of association, Watson *et al.* (2013) highlight the importance of human rights considerations in impact assessment. This research identifies that the work of Sen (1973; 1976; 1979; 1981; 1987b; 1992; 1997b; 1999b; 2000; 2005; 2008; 2014) and Nussbaum (1992; 1992; 1993; 1995; 2000a; 2000c; 2003; 2004; 2006a; 2011a; 2012; 2013a; 2015) have both focused on cases of disadvantage related to vulnerability, including historical, gender, poverty and ethnicity disadvantage. Their evaluation of disadvantages is grounded upon fundamental human rights and the realized impacts social arrangements have on capabilities. The CA has elaborated their work to consider the multidimensionality of a combination of these disadvantages (Deneulin and Mathai, 2006; Julian Walker *et al.,* 2013; George, 2014; Wendelspiess, 2014). This vast body of knowledge holds great benefit for EA when considering capabilities for participation.

The equity and effectiveness criteria of EA public participation can be understood to fit within the social contract tradition. Within this tradition, there has been an emphasis on the development of establishing more just public institutions (Blythe, 2008). Rawls (1971) noted that decision making processes require reasonable persons for fairness to occur when considering the burdens of judgement. The term 'reasonable' is used by Rawls (1971, p. 15) in an ethical sense: "reasonable persons are those who are willing to propose fair terms of cooperation and to abide by them, provided that others do the same". Rawls' (2001) justice theory made a significant advance in social contract theory introducing the institutional principle of justice as fairness. He proposed that if

anyone is to benefit more than another from a policy or social institution, it should be those worst off in societies who receive the advantage. Within EA public participation, in particular, there is an emphasis for this benefit within the practice for 'equitable opportunity'. There is a utilitarian assumption that equitable opportunity would be beneficial for the practice and the substantive purpose of EA (Jay *et al.*, 2007).

Laws (1996) highlights that fairness and justice are foundational to the purpose of public participation in environmental decision making. He identified however that the intergenerational considerations of decision making challenge the fairness of such decisions. Ballet *et al.* (2013) have identified that despite the similar challenge of intergenerational considerations, the capabilities approach provides a potentially workable and constructive analytical framework for intergenerational environmental justice. Grounded upon shared foundations, it is motivated here that this is initially most workable within the established and institutionalised process of EA public participation.

Although Sen (2009) strongly agrees with the purpose of the contractarian approach of Rawls' justice principle, he would challenge its realisation when looking at the disparities in society and the lack of benefit, and injustice, that many individuals and groups in society face. The list of shared participation and equity considerations tabulated above (Table 4) would be considered to encode justice in cases where the norms of equitable decision making are intended. Sen (2009) arguments applied in the South Africa context would maintain that a robust evaluation of fairness needs to consider not just what is intended by the NEMA or DEA&DP participation guidelines but also what is realized in the practice.

There is an analytical distinction between the capabilities a person possesses and the procedural context of a particular participation process. The fairness criterion of this research is grounded upon individual capabilities as they relate to the practice; not only on the particular instance of a stakeholder's participation experience. In this way, the opportunity to participate is a participation capability a person possesses. This is important for the evaluation of public participation as the peculiarities of a participation experience, which may be more influenced by the type of the proposed project than the nature of the participation process, may not be as reliably considered on grounds of fairness.

In her discussion of Posner and Weisbach's (2010) *Climate Change Justice*, Nussbaum (2013a) goes to great lengths to elaborate why theories of justice matter for better decision making and how the capabilities approach provides a useful formulation of justice which hold this potential. Nussbaum holds to this position despite a variety of imminent challenges to environmental considerations from within the capabilities approach (Burger and Christen, 2011). It is on this formulation of justice that Nussbaum builds her specification of a 'threshold' of entitlement that shall be discussed in the following section.

2.7.3 OPPORTUNITY, ABILITY AND MITIGATION OF OBSTACLES IN EIA PUBLIC PARTICIPATION

This section discusses how participation capability 'opportunity', 'ability' and 'obstacles' have been addressed in the EA literature. These three probes, proposed by Anand *et al.* (2007) for capabilities evaluations, are discussed within EA literature. However, they are rarely conceptualised within a framework of well-being, equity or justice and limited to fragmented evaluations of best practice. As a consequence they are not well integrated, nor are they conceptualised from a multidimensional perspective that explains how capability 'opportunity', 'ability' and 'obstacles' relate to each other. Palerm (2010, p. 589) has identified that:

> … if the effectiveness of public participation is to be properly assessed, the analysis framework must not limit itself to assessing the opportunities for participation, but must also assess whether actors have the capacity and are willing to make use of such provisions.

Palerm (2010) goes on to discuss the evaluation of best practice provisions for stakeholder participation together with actor's attitudes and capacities, thereby tacitly linking opportunity and ability for participation within his robust empirical-theoretical framework. Reed (2008, p. 2422) agrees that it is not sufficient to only offer stakeholders with the opportunity to participate: "they must actually be able to participate". Partidario and Sheate (2012) identify opportunities for a learning-orientated process in impact assessment instruments that can increase the capacities and possibly empower stakeholders. Stakeholder ability is reflected widely in the EA literature with a focus on capacity development (Doelle and Sinclair, 2006). Kolhoff *et al.* (2009) discuss the contribution of capacities and context to the effectiveness of EIA in developing countries. They identify that context-specific regulatory characteristics and "the capacities of key stakeholders are insufficiently considered in evaluations of EIA system performances". They focus on the underlying constraints (obstacles) to better performance and consider a lack of capacity as an identifiable obstacle.

Hartley and Wood (2005) base their evaluation of the effectiveness of EIA public participation in the UK on criteria derived from the Aarhus Convention. The barriers Hartley and Wood (2005) identify are contextually framed but are arguably not limited to the UK context. They identified the following eight barriers to implementing the practice principles of the Aarhus Convention:

1) Poor public knowledge of planning, legal and waste licensing issues.
2) Poor provision of information.
3) Poor access to legal advice.
4) Mistrust of the waste industry.
5) NIMBY syndrome.
6) Failure to influence the decision making process.
7) Poor execution of participation methods.

8) Regulatory constraints (Hartley and Wood, 2005, p. 333).

A number of the barriers they identify are reflected in varying degrees in the international public participation literature such as in Choguill (2001), Hughes (1998), Kolhoff *et al.* (2009) and Odparlik and Koppel (2013). Some examples of other obstacles and challenges to public participation identified in the literature are, inter alia, time and money, communication barriers, cultural differences, education, gender, physical remoteness, mistrust and elitism (Hughes, 1998) and the diversity of the stakeholder groups (Negev, 2012).

The literature however rarely discusses these barriers and obstacles to participation within a framework of justice or equality. Hartley and Wood (2005) reflect Palerm's (2010) considerations of stakeholder attitudes in their discussion. However, in their evaluation of 'effectiveness' and the procedural barriers to participation, Hartley and Wood (2005) do not consider the obstacles that individual stakeholders face. Both the Aarhus Convention and their evaluation more closely align to Chanchitpricha and Bond's (2013) description of procedural effectiveness in EIA, than an evaluation that is calibrated towards a stakeholder sensitive evaluation of public participation. No attention is paid to integrating stakeholder's abilities for participation or how such obstacles can be effectually mitigated. This is surprising considering the implicit justice considerations of the Aarhus public participation practice principles.

Rossouw and Wiseman (2004, p. 132) identified that after ten years of democratic rule in South Africa, the emerging participatory democracy was beginning to reflect a shift in environmental policy debates to "include citizen rights, socio-economic issues and quality of life" in the environmental agenda. Despite realisation challenges they recognised that a paradigm shift had occurred in South Africa which has moved policy from "denying access to information (in the Apartheid era) to the current understanding that information can provide a means to empower citizens" (Rossouw and Wiseman, 2004, p. 132). They identify challenges to the realisation of policy level environmental management system which include *inter alia*, knowledge and capacities of the stakeholders in the broader society. Murombo (2008) concurs that there are obstacles to participation that have been removed in the South African EA context. He shows that although the doctrine of *locus standi* has historically served a gatekeeping function in South Africa, in terms of the Constitution of South Africa, now "virtually any person can bring an action to protect a provision of the Bill of Rights … [including inter alia] the right to an environment not harmful to health and well-being, right to housing, health, sufficient water and food" (Murombo, 2008, p. 170).

Scott and Oelofse (2007) highlight that the South African EA procedures do not justly include the poor and marginalised affected parties. Kotze and du Plessis (2010, p. 13) have identified that to be successful in a court appeal "adequate scientific knowledge seems to be a prerequisite for

successful redress". They resolve that the South African "public must … also be educated and empowered with the requisite degree of knowledge to enable it to effectively partake in decision-making" (Kotze and du Plessis, 2010, p. 13). In their opinion, the solution to overcoming such obstacles requires that "The State should literally 'bring governance to the people' through public participation" (Kotze and du Plessis, 2010, p. 13). These macro social, political and economic barriers, together with the individual capability constraints to participation, can be considered from a CA perspective to reflect a failure of provisions for stakeholder capabilities for effective and equitable participation.

Barriers to participation and the realisation of the Aarhus principles can be considered from a personal capacity (internal capabilities) as well as an institutional perspective (combined capabilities) concerning individual capabilities. The literature presented so far focuses mainly on the external and practice related challenges. Standard personal capacity considerations that are included in the research are limited to the South African adapted Multidimensional Poverty Index (MDPI) (Stats-SA, 2014b) and the South African disability profile (Stats-SA, 2014a). The MDPI is used to potentially identify comparable and significant poverty challenges. The South African disability profile is used as a guideline to identify six standard disabilities in South Africa. These indices are not adequate for a nuanced understanding of functionings; however, they are used as a comparable and contextually appropriate minimum requirement for capability support:

Multidimensional Poverty Index (Stats-SA, 2014b):

'Lighting', 'Heating', 'Cooking', 'Water', 'Sanitation', 'Dwelling Type' and 'Asset Ownership'.

National Disability Profile (Stats-SA, 2014a):

'Sight', 'Hearing', 'Communication', 'Walking/Climbing stairs', 'Remembering or Concentrating' and 'Self-care'.

The consilience logic of this research proposes that meaningful participation would align with the realisation of individual freedoms to participate. Negatively put, capability deprivation would deleteriously impact upon stakeholders realising equitable and effective participation. Where the barriers to such capability realisation can be identified and removed, they should be. Discussions of stakeholder capacities (ability) need to be included in an evaluation of participation capability opportunity. Likewise, evaluations of the barriers to participation need to include a focus on stakeholders facing capability opportunity constraints, which may or may not be related to their ability and opportunities for participation. This is part of the wider developmental agenda of creating capabilities and enhancing people's freedoms to choose the life they consider valuable. It concerns both institutional as well as personal capacity-orientated capabilities. The discourse of EA public participation will remain focused on effectiveness. This is an appropriate focus for the praxis.

Notwithstanding imperatives of efficiency and effectiveness, unless equity considerations are adequately included in the evaluation of effectiveness, the practice will not be able to address instances of unjust arrangements faced by stakeholders in EA decision making.

2.8 CONCLUSION: LITERATURE REVIEW

This literature review provided a description of the theoretical foundations of the practice of environmental assessment (Section 2.2) and the core concepts of the capabilities approach (Section 2.5). It contextualised the research as it applies to the two separate disciplines and provided the descriptive foundation for the operationalization of key concepts. The concepts selected and highlighted in this literature review were scoped by the research focus on stakeholder capabilities for participation in environmental assessment (EA).

The discussion considered the evolution of the practice of public participation in EA as a regulatory tool for decision making (Section 2.1). It highlighted the on-going discussion in the literature of the role of public participation in EA (Section 2.2), the need for better integration of social considerations in EA (Section 2.2.1), and the need for theory building in EA (Section 2.2.3). The legal provisions for public participation in South Africa were identified and discussed in their relation to human and environmental rights under the NEMA (Section 2.3). The discussion suggested that developing a capabilities approach to environmental assessment would assist in providing more appropriate attention to human development and well-being considerations for EA decision making and for the associated participation processes (Section 2.7). A thorough review of the capabilities literature outlined the foundational concepts of the approach. Recent developments have positioned the CA with a more robust orientation towards sustainability, intergenerational justice and the integration of ecological considerations (Section 2.5.5). A corollary of the proposed consilience between the CA and EA is that it holds potential for the training of assessment practitioners which can assist in the practitioner's contemplation of the human development considerations in public participation and decision making processes (Section 2.2.4). The chapter closes with an outline of what theoretical foundations a capabilities approach to environmental assessment would entail by identifying the shared public participation principles of the EA and EA (Section 2.7.1) and operative concepts for the workability of a capabilities evaluation of EA public participation (Section 2.7.2). The chapter to follow elaborates key concepts that are operationalized in the research and discusses how they can be used for the evaluation of public participation.

3 CHAPTER THREE: METHODOLOGY

3.1 INTRODUCTION

The methods described in this chapter operationalize the selected aspects of the capability approach for the evaluation of meaningful participation in environmental assessment. They are applied to five case studies in a multiple case approach. Comim (2001, p. 1) proposes four sequences for operationalization of the CA that go beyond simply putting theory into operation in a particular mode. They include the following:

1. Theoretical inclusion: Elaboration of theoretical concepts with potential empirical significance;
2. Measurement: Transformation of these theoretical concepts into empirical variables;
3. Application: Use of these variables in qualitative empirical analysis;
4. Quantification: Use of these variables in quantitative empirical analysis.

Following this recommendation, this chapter is structured according to Comim's (2001) four steps. Each operationalization step contains a description of the sequential explanation of the methods as they were developed and applied.

Firstly, the main concepts used for operationalization that were identified in the literature review are elaborated with their empirical significance to this mixed methods approach. This research has proposed the consilience of the CA and EA public participation theory throughout the literature review on the grounds of the CA formulation of justice. This section demonstrates how this consilience can be empirically achieved through 'theoretical inclusion'. This section presents the aim and objectives of the research together with the theoretical framework within which concepts are considered to operate.

Secondly, the chapter describes the four main empirical methods applied by the research and how each is technically designed and implemented for the purpose of 'measurement' and 'quantification'. It explains how the concepts drawn from the CA have been transformed and applied to EA stakeholder consultation to be used as empirical variables. These four methods focus on the individual capabilities and functionings associated with the public participation experience. They include the following:

1) An analysis of the environmental assessment reports.
2) A Q-methodology exploration of social perspectives on participation experiences.
3) A ranking Q-methodology identifying priority functional capabilities.
4) A survey using Likert scales evaluating stakeholders' participation experiences.

Although each of these methods explore and test for different aspects of the environmental assessment cases, they have the complementary objective of focusing on individual capabilities and functionings in public participation. The methodology primarily explores emergent observations in the cases for the purpose of theoretical development through an inductive approach. The methods

include supplementary deductive approaches that test for the stability of the selected operationalized concepts to a limited extent. The deductive substantiation of capabilities conceptions is built-in to provide a validation of the stability of the capabilities concepts used in the appraisal of the cases. Validation of concepts is essential in order to check the constancy and applicability of the empirical probes used in the research. The probes are both theoretically innovative, as well as applied in a novel way to public participation and environmental assessment and therefore require internal validation. The deductive testing of concepts is important for the research agenda of applying a capabilities approach to environmental assessment. The core methodological endeavour of this research is however inductive. It aims to develop concepts for operationalization, apply them in empirical observation to a variety of cases, then through contemplation of the findings, develop an emergent theoretical framework. The resulting research output provides recommendations and commendations. The recommendations focus on minimally just arrangements for public participation and the feedback loops of participation choices on capabilities. The inductive approach commends the theoretical application of the capabilities approach to environmental assessment and to public participation.

Section 3.1 provides an introduction to the methodology and Section 3.2 outlines the aim and objectives of the research. Section 3.3 elaborates the theoretical inclusion of selected capabilities and functionings concepts that are to be set in operation. Section 3.4 describes the technical development of each selected method and explains their relevance to the literature as well as the relevant research objectives. Section 3.5 explains how each method was applied as a fieldwork package to each of the five EA case studies in South Africa between June 2014 and September 2015. The selection of research respondents is explained and demonstrated for each case to clarify the application of the methods and the validity of the sample populations used for a particular method. Section 3.6 presents a description of the quantitative aspects of the methodology and the triangulation intentions of the combined use of multiple qualitative and quantitative methods.

Throughout the chapter attention is drawn to the theoretical, operationalization and technical limitations to the methodology applied by the research. Each of the four methods follows orthodox implementation regarding design, application, measurement and quantification. Each method is applied to the case studies through the inclusion of capabilities, functionings and participation concepts. The four empirical methods are applied separately, to provide disaggregated empirical, case and method clarity. Their triangulation potential and scope for identification of multi-level and crosscutting trends are also discussed.

A combination of quantitative and qualitative analysis that is informed by the empirical results establishes grounds for the discussion of the findings. It is anticipated that the process of consilience is not unidirectional, nor is it without empirical challenges. Conceptually and methodologically it is possible that there may emerge findings that are useful for the development of

environmental assessment theory and practice that the applied capability insights uncover. However, it is just as likely that the CA may benefit from the practice insights gained from the application to environmental assessment.

3.2 AIM AND OBJECTIVES

AIM

This research aims to advance the integration of human development and well-being considerations in participatory decision making through the development of a capabilities approach to the practice of environmental assessment.

OBJECTIVES

1. Develop an evaluative framework for 'meaningful' public participation in environmental assessment that better considers the capabilities of stakeholders.
2. Explore, test and evaluate a selection of environmental assessment case studies using an applied capabilities framework.
3. Reflecting on the emergent findings in the cases, contribute towards the praxis of environmental assessment through the theoretical development of a capabilities approach to environmental assessment.
4. Make recommendations for policy, the practice and the further research agenda.

Multiple steps are taken by the research in order to achieve the research aim of developing a capabilities approach to environmental assessment. For the reader's sake, the sixteen steps tabulated below are presented with the corresponding sections of the dissertation to provide a general overview of the research. In order to achieve the aim, this research will:

Steps taken by the research	**Chapter/Section**
	Literature Review
1. Outline the evolution and role of best practice public participation in environmental assessment, together with the related challenges of evaluation.	Section 2.2
2. Establish the theoretical nexus of the two disciplines (CA and EA) through a literature review.	Section 2.5.4 & 2.7 Section 2.7.2
3. Outline a principled consilience of the two approaches.	Section 2.7.3
4. Identify individual, institutional and practice capability barriers to participation in the literature.	
	Methodology
5. Identify empirical variables from the capabilities approach that can be applied for the evaluation of public participation case studies.	Section 3.3
6. Identify appropriate methodologies for the evaluation of public participation processes that are able to incorporate and apply the operationalized concepts as well as meet the contextual practice challenges.	Section 3.4
7. Identify the limitations and adequacy of the selected methods.	Section 3.4; 3.5
8. Develop appropriate criteria and rationale for the selection of appropriate case studies and respondents within the selected case studies.	Section 3.5
9. Conduct a pilot study to test and refine the empirical workability of the concepts and methods selected.	Section 3.4
10. Apply the methodology to the selected case studies. a. Observe and identify participation experiences and procedures in the cases. b. Empirically probe stakeholder capabilities and functionings in the cases.	Sections 3.5; 3.6
	Results & Discussion
11. Record, organise and present the empirical findings.	Section 4.1.1 & Appendices
12. Analyse and discuss the emergent and empirical findings.	Section 4.3 – 4.8
	Theoretical Development
13. Develop a theoretical framework for the practice that is based on the principled consilience of the two approaches and integrated with the case observations and results.	Section 5.1; 5.2
14. Reflect on the limitations and adequacy of the theoretical framework proposed.	Section 5.3
	Conclusions
15. Reflect on the limitations and adequacy of the methodology used.	Section 6.4
16. Make recommendations for policy, the practice and the further research agenda.	Section 6.1; 6.2; 6.3

3.3 THEORETICAL INCLUSION

This section focuses on the elaboration of theoretical concepts from the capabilities approach and environmental assessment and displays their potential empirical significance. The research focuses on what components of the capabilities approach can practically be used to support in 1) the evaluation of public participation, and 2) the integration of relevant human development and well-being considerations in environmental assessment. It is anticipated that a meaningful participation process should enhance the identification of what can be cogitated as 'relevant'. The research uses the capabilities approach to adopt a methodological approach that is cognisant of the practice and contextual challenges societal objectives and complexity present the evaluation of public participation, and the integration of relevant human development and well-being considerations in environmental assessment. The capabilities approach has an established philosophical and public practice application of value plural and public decision making that has been somewhat deficient within the EA literature and which augments the methodological focus here.

The high degree of heterogeneity of people, their interests and perceptions present a challenge to identifying societal preferences. It can be argued that in a strict sense societal preferences do not exist. The quantification of capabilities and the value ranking associated with capabilities is therefore an exploration of descriptions of preferences. This explores the value rankings as they apply to individuals as well as to groups within society. Although there is a significant difficulty in quantifying social values in a general and exhaustive sense, the capabilities approach provides an evaluative scope that focuses on the agreeably unjust arrangements in society that can be identified for the purpose of their removal. Through the metric of capabilities, the research explores the preferences that individuals and groups of stakeholders have regarding such minimally unjust arrangements as they can be observed within participatory environmental decision making.

3.3.1 CONCEPTS FOR OPERATIONALIZATION: THEORETICAL INCLUSION

'Operationalization' in this methodology is defined as a process of adding enough particularities that can be tried out, put to work in times and space, in an informative if not entirely conclusive manner" (Alkire, 2001, p. 11). In order to do this, the research relies on established and current capabilities research in identifying capabilities concepts for operation that will allow for theoretical inclusion with environmental assessment. In this regard, the research follows Robeyns' (2003) guidance that operationalization needs to identify a list of valuable capabilities and focus on the broader space of opportunities for achievement. The research provides methods that include differentiators that distinguish weighted value attributed to different capabilities. It attempts to provide a degree of reflectivity regarding the difficulties involved in capability trade-offs.

Not all applications of the capability approach require empirical research techniques. Some applications are based on analytical reasoning or critical analysis (Robeyns, 2006). But many applications of the capability approach do rest on new empirical analysis, and therefore require the use of empirical research techniques. Given the wide scope of capability applications and the highly interdisciplinary character of CA literature, it is not surprisingly that an extensive range of empirical research techniques have been employed (Kuklys, 2005). Robyens (2006) identifies at least nine different types of capability applications. Without digressing into these different types it is important to highlight that the case study method applied in this research is one of many. Other applications of the CA include general assessments of the human development of a country; the assessment of small-scale development projects; identification of the poor in developing countries; poverty and well-being assessments in advanced economies; an analysis of deprivation of disabled people; the assessment of gender inequalities; theoretical and empirical analyses of policies; critiques of social norms, practices and discourses; and finally, the use of functionings and capabilities as concepts in non-normative research. This list highlights the potential for the CA to complement the practice of environmental assessment through its applicability to, inter alia, inequalities, human development and well-being, development projects, identification of the poor and application in developing countries.

Comim (2001) identified five main groups of operationalization of the capabilities approach. The first group Comim identifies is the use of multivariate techniques (factor analysis, principle component analysis, fuzzy sets) to identify and measure components of valuable functionings. The second group is empirical studies that use econometrics, sometimes with descriptive statistics, to challenge the unidimensional picture of poverty given by monetary indicators. These studies emphasise the target issue and involve the elaboration of indexes of particular functioning deprivations that help to reveal the social dimensions of poverty. The third classification Comim (2001) identifies are case study applications that use descriptive data (often based on surveys) to conceptualise and provide evidence of the complexity of a certain situation. Some examples of these include applications to health care (Tibandebage and Mackintosh, 2005), culture (Altman and Lagmontane, 2004), food relief (De Herdt, 2008), labour markets (Sehnbruch, 2004) or education (Unterhalter, 2003). This research falls generally into this case study classification. The fourth group of applied capabilities research Comim (2001) identifies are theoretical applications that use arguments provided by the capabilities approach to illuminate the analysis of situations or cases of factual interest. Finally, the fifth classification Comim provides are methodological applications that use the framework of the capabilities approach to discuss issues that are difficult to be addressed within a utilitarian perspective. The choice of one or a combinations of the above classified groups of applications of the capabilities approach depends on the context and the purpose of the application of the CA. Sen (1999, p. 84) argues for “practical compromises” to dominate the choice of strategy. The

empirical, project specific, governance and practice demands of environmental assessment require the selection of the case study approach for this research.

The literature review provided an introduction to the capability approach. It identified the core concepts and elaborated how they relate to environmental assessment and public participation. In summary, Robeyns (2016, pp. 9-12) identifies the core elements of 'cababilitarianism' to include the following twelve elements:

Empirical focus:

1. *Functionings* and *capabilities* are the core concepts.
2. Clarity is always needed to identify and distinguish *means and ends*.
3. People have different abilities to convert resources into functionings – *conversion factors*.
4. Human diversity requires that capabilities are *plural* and that well-being considerations should be relevant to able-bodied and disabled persons.
5. Some reductions in capabilities are caused directly by *structural constraints* that affect members of different groups differently.
6. *Agency* must be accounted for.

Focus on 'the good':

7. Functionings and capabilities form the '*evaluative space*'.
8. It is important to *specify which capabilities matter* for a particular theory and context.
9. Functionings and/or capabilities are not necessarily the only elements of *intrinsic value*. Capabilities may capture the opportunity aspect of freedom but not the procedural aspects.

Considering 'rightness':

10. The focus is on the individual: *normative individualism*.
11. Whenever *rightness* involves a notion of the good, one should *use the theory of the good* as entailed by the core characteristics of the capability approach[1].
12. There are *legitimate claims about the right* that do not refer to the capabilitarian notion of *the good*.

The selection of concepts and methods are guided by these twelve core elements, particularly the first ten. In order to operationalize concepts from the CA to environmental public participation, it is important to apply the high-level and abstract nature of the CA to the construction of research survey questions that people can be realistically asked. The operationalization of the CA to various fields is an emerging and on-going empirical challenge for the discipline (Anand and van Hees, 2006; Anand *et al.*, 2007; Anand *et al.*, 2009; Wolff, 2014). Likewise, there is no widely accepted social science empirical or philosophical grounding for EA public participation (Lawrence, 1997; 2003). The dearth of applied CA research to the environmental and public participation fields motivates strongly for what can be gained from the interdisciplinary approach proposed here.

The methods are framed to focus directly on the capabilities that stakeholders' value. The operationalization includes the testing of identifiable capabilities as well as their value or prioritisation. In this regard, certain aspects of the methods intend to be more 'bottom-up' and intend to be inductive in approach. There are complementary deductive aspects within the methods that aim

[1] This means that if we believe that the right thing to do is to prioritize the lives of the worst-off, then a capabilitarian version of this claim would say that we should prioritize the functionings and/or capabilities of the worst-off rather than their happiness or their command over resources (Robeyns, 2016).

to test for the stability of the operationalized concepts in the applied contexts. George *et al.* (2014, p. 11) demonstrate that valuable ends of individuals can be divided into two categories: "ends which are just held as desirable" and "ends which are pursued with a drive." Not all of the ends held as desirable by individuals are pursued with drive. Some ends or goals might fail to become a priority. It might also be that the individual might agree that a particular end has negative value attached to it but pursues it nevertheless. While people easily list out several valuable ends in participatory surveys, a prioritisation of these different ends could be understood better from a more detailed examination of their lived experiences. It is these focused priority ends which are 'pursued with a drive' that this research methodology targets.

Sen (2005) and Nussbaum (2003) have argued that focusing on capabilities rather than functionings as a research aim helps to provide a range of possible ways of living rather than imposing a particular notion of the good life. Functionings, however, can be more useful for empirical work as they involve more easily quantified observations and outcomes (Comim, 2001; Fukuda-Parr, 2003). In this research, the operationalization aims to include both functionings and capabilities in the evaluation to the extent that they indicate capability realisation.

Comim (2001) cautions that researchers should follow Sen's distinction between two different levels of analysis in CA research, namely the foundational (normative) level and the practical (empirical) level. The normative aspects of certain capabilities make them difficult to measure in particular contexts. Sen (1999b, p. 81) cautions that in such circumstances "attempts at putting them on a 'metric' may sometimes hide more than they reveal". The normative claims identified within this case study research are limited as empirical findings, bounded by the spatial, temporal, project and population specificities as well as the cases regulatory situations. The findings are therefore treated as preliminary findings. It is through the extension of the CA in such empirical and contextual endeavour that the normative claims of the approach can be reflectively challenged (Clark, 2003; Clark and Fennell, 2014), revised (Anand and van Hees, 2006; Anand *et al.*, 2007; Anand *et al.*, 2009) and potentially advanced (Gutwald *et al.*, 2014; Stewart, 2014b; Basta, 2015; Byskov, 2015; Mabsout, 2015; Pelenc and Ballet, 2015; Robeyns, 2016).

Sen (1999b, p. 81) calls the 'direct' CA methodological approach a "distinguished capability comparison" of selected capabilities. An evaluative triangulation of Method 1 (Report Analysis) and Method 3 (Ranking Q-method) aims to provide a detailed comparison between the identified capabilities in this empirical work and those of comparable CA research. This research follows Nussbaum (2000a), Anderson and Leo (2015), Glavovic (2006) and Kleist (2013) who have argued that applicable capabilities should be delineated by their relevance to those needed in order to be able to participate as a citizen.

There is a constructive and on-going debate within the approach between the Senian freedom orientated position of avoiding universality claims, and that of Nussbaum's (2003, p. 38) proposed "open-ended", or "humble" list (Nussbaum, 2000a, p. 77). Sen's approach has come to be referred to as the 'Capability Approach' and Nussbaum's formulation as the 'Capabilities Approach' as it refers to her enumerated list (Stewart, 2013, p. 157). With good reasons for universal applicability, Sen does not provide a minimum level of capability for what a just society ought to be. The difficulty in applying Sen's work is associated with its vague guideline or "outline" as Nussbaum (2003, p. 35) refers to it. In contrast, Nussbaum (2003, p. 33) has consistently argued that capabilities can help the construction of a normative conception of justice, "only if we specify a definite set of capabilities as the most important ones to protect".

In contrast, Nussbaum's open-ended list of 'functional capabilities' has proven an attractive starting point for capability identification (Clark, 2003, p. 179) and for empirical testing (Anand *et al.*, 2007; Anand *et al.*, 2009). The use of Nussbaum's and Clark's lists are applied in this research with the purpose of testing for a) identification, b) normative ranking and c) potential generalizability of capabilities. The methods test for the appropriateness of the capabilities on Nussbaum's and Clark's lists within the South African EA participation context. In doing so, the research intends to confirm or challenge the applicability of Nussbaum's Aristotelian list in the South African context, in light of Sen's abstemiousness from specifying particular capabilities.

Cognisant of the epistemological tensions between these two positions, and the value for the CA of both, the position of this research is that it holds to the epistemological stance of deliberative democracy proposed by Sen, in terms of specification requirements because of its suitability to the discursive and dialogic ideals of public participation (Feldman and Gellert, 2006; Glavovic, 2006). However this research takes Nussbaum's list as a flexible starting point for that deliberation, with substance that can challenge the intellectual cul-de-sacs of cultural relativism. Nussbaum's (2009, p. 49) defence of her position presents an appropriate fit for EA public participation in the way she motivates that the list is to be applied by "reasonable individuals choosing the best ideas over local ideas, since there is no reason to assume that local ideas are 'the best ideas we can find'". This notion of testing ideas fits well with the impact identification process of the practice of environmental assessment. In this way, the application of the CA to EA does not necessarily require the creation of new social institutions. The practice of participatory decision making and the principle of accepting challenge from other viewpoints is already in place in EA to facilitate this (Byskov, 2015). The extension here includes the consideration of impacts on capabilities.

The research methodology caters for these two contrasting epistemological positions of Sen and Nussbaum in the reflective combination of both inductive and deductive methods. Method 1 evaluates the trends in the reports that identify more general references to capabilities and considers

the variance in emphasis. This aims to be a more bottom-up approach (Wilson-Strydom, 2014a). Method 1 identifies what is valued by stakeholders within their contextual articulation as well as the emphases the EAPs place on those same capabilities in the reports. In this way, it is more appropriate to the Senian position for the identification of valued capabilities. Burchardt and Vizard (2011) have developed a capability-based measurement framework as a basis for equality and human rights monitoring. Their work provides a methodological exemplar for the operationalization of the capabilities approach to the human development and well-being aspects of environmental assessment. In a similar fashion to the two epistemological positions of Sen and Nussbaum, Burchardt and Vizard (2011) propose a two-stage procedure for deriving a capability list. This combines human rights and deliberative consultation and strikes a balance between internationally recognised human rights standards and principles on the one hand, and direct deliberation/participation on the other, in the development and agreement of capability lists. In a similar fashion, a combined top-down and bottom-up approach to operationalizing the capabilities approach is developed here with application to the practice of environmental assessment.

Method 2 combines a bottom-up and top-down approach to the formulation of social perspectives on the participation experience using a conventional Q-method. The Q-methodologies applied in this research are explained in more detail with regard to measurement (Sections 3.4.3 and 3.4.4) and quantification (Sections 3.6.1 and 3.6.2) in the later sections of this chapter. Method 3 uses a Q-method to consider the prioritisation and rankings that stakeholders placed on functional capabilities. This method is more appropriate to investigate a contextual testing of a normative ranking of capabilities that can be compared with the work of Clark and Nussbaum (Wilson-Strydom, 2014a). This Q-method uses a prescribed list of 30 functional capabilities. However, the Q-sort process also allows for respondent's self-evaluation of capabilities and needs. It thereby fits with Nussbaum's revised "partial, not comprehensive, conception of the good life, a moral conception selected for political purposes only" (Nussbaum, 2000b, p. 77). The findings drawn from the two Q-methods are combined in the evaluation to consider the identification, and the variance in ranking, of capabilities across the cases as well as across the methods. Method 4 is an evaluative survey using Likert scales and tests for capability and functioning probes in the respondent I&AP's experience.

Nussbaum's open-ended list of 'Central Human Capabilities' is grounded upon what she has defended to be universal human rights (Nussbaum, 2003). One of the operationalization tasks of this research involves translating selected aspects of Nussbaum's list and the principles inherent in the formulation of her list, to the EA public participation process. Nussbaum's list identifies capabilities that impact on an individual's ability to effectively engage in public activities, as a citizen, within a functioning democracy. Although they are positively and normatively framed in her list, they can be contextually and descriptively applied with regard to a focalizing situation. Nussbaum's list is applied

in differing forms and emphases in each of the methods to be discussed in the following sections. Table 5 presents a tabulated summary of Nussbaum's list of 'central human capabilities':

Table 5: 'The Central Human Capabilities' (Nussbaum, 2003, pp. 41-43)

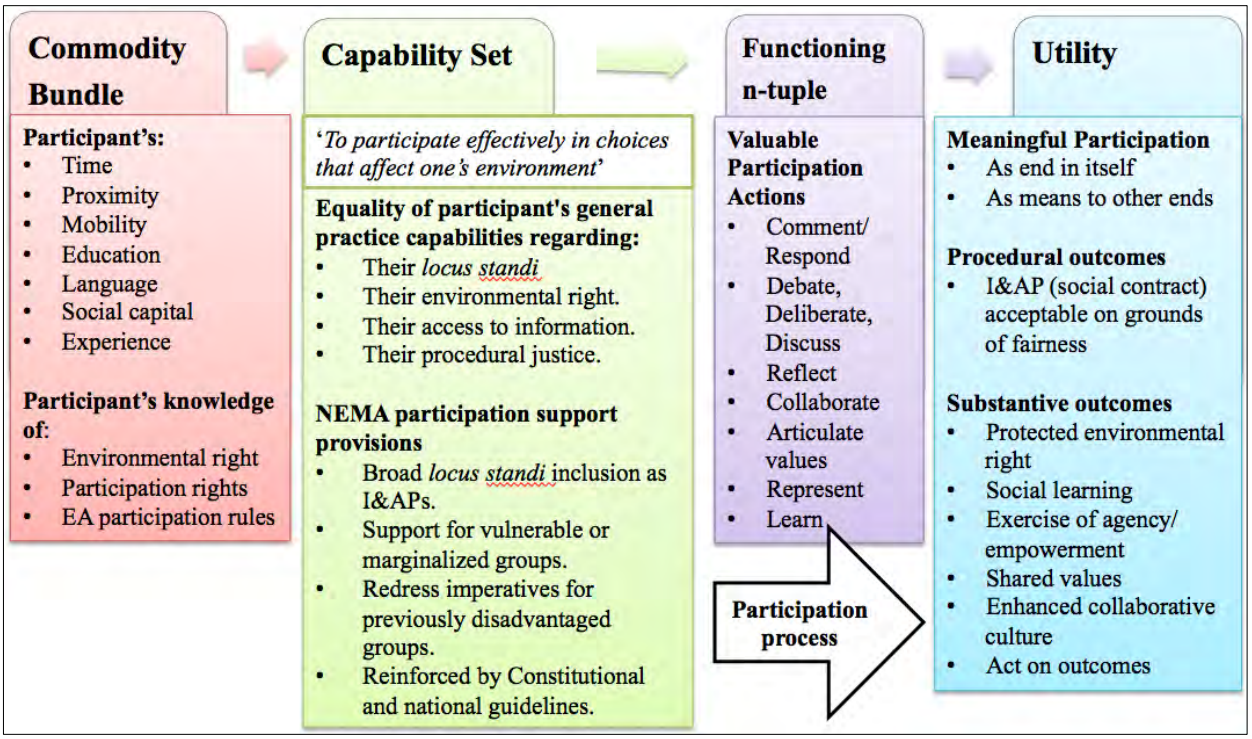
1. Life	• Being able to live to the end of a human life of normal length. • Not dying prematurely, or before one's life is so reduced as to be not worth living.
2. Bodily Health	• Being able to have good health, including reproductive health. • To be adequately nourished & to have adequate shelter.
3. Bodily Integrity	• Being able to move freely from place to place. • To be secure against violent assault, including sexual assault and domestic violence. • Having opportunities for sexual satisfaction and for choice in matters of reproduction
4. Senses, Imagination, and Thought	• Being able to use the senses: To imagine, think and reason – and to do things in a 'truly human' way, a way informed and cultivated by an adequate education, including, but by no means limited to literacy and basic mathematical and scientific training. • Being able to use one's mind in ways protected by guarantees of freedom of expression with respect to both political and artistic speech, and freedom of religious exercise.
5. Emotions	• Being able to have attachments to things and people outside ourselves. • To love those who love and care for us, to grieve in their absence.
6. Practical reason	• Being able to form a conception of the good and the engage in critical reflection about the planning of one's life.
7. Affiliation A: Being able to live with and towards others B: Having the social bases of self-respect and non-humiliation	A. To recognise and show concern for other human beings, to engage in various forms of social interaction. To be able to imagine the situation of another. B. Being able to be treated as a dignified being whose worth is equal to that of others.
8. Other Species	• Being able to live with concern for and in relation to animals, plants and the world of nature.
9. Play	• Being able to laugh, to play, to enjoy recreational activities.
10. Control Over One's Environment A: Political B: Material	A. Being able to participate effectively in political choices that govern one's life. Having the right of political participation, protections of free speech and association. B. Being able to hold property (both land and movable goods) and having property rights on an equal basis with others. Having the right to seek employment on an equal basis with others. Having the freedom from unwarranted search and seizure. In work, being able to work as a human being, exercising practical reason, and entering into meaningful relationships of mutual recognition with other workers.

In identifying an operational capability set for participation in environmental assessment, this research has considered the purpose of Nussbaum's list of capabilities. Applying Nussbaum's tenth capability to environmental assessment (not only political participation) can reasonably be argued to fit within her formulations, as it would be an outworking of a person's control of their material and political environment (No. 10). Many aspects of participation do include political considerations. Furthermore it is in line with the purpose of her eighth capability, 'being able to live with concern for and in relation to animals, plants and the world of nature', as well as her fourth [imagine, think and reason], fifth [human association], sixth [conception of the good and critical reflection], seventh [affiliation] and ninth [play] capabilities; as they imply participation functionings of different types. Two forms of operationalization of Nussbaum's tenth capability in this research are the applied use of the testing of Clark's formulation of the functional capability [To participate in political activities that affect your life] and in

an applied EA formulation, [I am able to participate in environmental decision making that affects my life if I want to]. Both forms are discussed further in subsequent sections (3.4.4 and 3.4.5).

Figure 6 below demonstrates how a participation capability set can be conceptualised within the participation process. The flow of the diagram indicates that the commodity bundle can be enhanced or reduced by the capability set. Importantly, the participation actions that a stakeholder can realistically achieve, their 'functionings', are founded upon, or at least influenced by, the entitlements encoded in the capability set providing for variable commodity conditions of individuals.

Figure 6: An environmental assessment participation capability set (after Nussbaum, 2003)



The focus here is on a stakeholder's capability set: 'to participate effectively in choices that affect one's environment'. The capability set is located within an analytical frame for considering the agency and utility an individual can realistically achieve through engaging in the participation process. The 'commodity bundle' is the combination of commodities that a stakeholder would bring to a process such as, *inter alia*, their time to participate, their proximity to community meetings, their language or their mobility. The capability set builds upon the capital of the commodity bundle and identifies the capability considerations for equal participation. Figure 6 indicates a selection of general practice participation capabilities such as a stakeholder's *locus standi* and their access to information. It also indicates four provisions for capability support that are specific to the South African EA regulations including a broad and inclusive interpretation of *locus standi*, support for vulnerable or marginalised groups, and redress imperatives for previously disadvantaged groups. It highlights that these provisions are reinforced through Constitutional provisions and national public participation

guidelines. These are the critical variables that would expand or constrain a person's ability and opportunity to participate effectively in choices that affect their environment.

Through drawing attention to a participant's commodity bundle, their capabilities and their functionings, Figure 6 indicates that the degree of utility derived from participation functionings can only reliably be evaluated when considering the capability set upon which that utility is derived. Evaluation of the process cannot be solely considered by commodity or utility considerations alone. Unequal participation situations would prevail if existing disparities of commodity availability determine the degree of functionings. Utility conclusions that are drawn without considering the conditions from which meaning was achieved can also be misleading for evaluative processes. For participation fairness, evaluation of capabilities provides a more robust and objective stance. The capability to participate in the choices that affect one's environment provides an operative participation criterion for the evaluation of effectiveness. It also provides a flexible but ethically grounded interpretation of what considerations of fair claims of 'meaningful' participation should entail.

The articulation of values, preferences or arguments on the grounds of their capabilities has potential benefit for the EA practice. A vast amount of stakeholder input into EA public participation is articulated as subjective preferences. Rarely are these adequately associated with stakeholder commodities and utility. Preferences associated with utility functions are easily dismissed as subjective and relative; lacking in objective quantification and thereby disregarded. Where preferences can be easily discounted on subjective grounds, this research argues that presenting an argument that is articulated from a CA has greater scope for developing explanations that can be better formulated in light of human well-being and which cannot be as easily discarded. The quality of the information base, the scope of relevant information, the level of detail and the articulated argument can thereby be improved and more rationally grounded. The goal of which is to contribute to decision making that would better guard against injustice with regard to capabilities.

3.4 MEASUREMENT

This section focuses on how each of the selected methods explore emergent capability and functioning aspects in the cases and how theoretical concepts are transformed into empirical variables for measurement. Anand *et al*. (2009) provide methodological guidance to this section through their demonstration that human capabilities can be measured with the aid of suitably designed statistical indicators. Likewise, Anand *et al*. (2007) provide methodological guidance to this section through their focus on the questions of whether and how capabilities can be measured. They demonstrate ways

in which capability data can be analysed assisting the validation procedures in the methodology adopted by this research.

3.4.1 FIELD WORK METHODOLOGY

3.4.1.1 IDENTIFICATION OF OBJECTS FOR MEASUREMENT: OVERCOMING BARRIERS TO PARTICIPATION

The methods described in this section demonstrate how capability concepts are operationalized using qualitative and quantitative means. They aim to provide a deeper and contextual understanding of the stakeholder's participation experience in light of decision making that would impact on their environment. The four methods used in this research include firstly, an analysis of the EA and public participation reports; secondly an exploration of the variance in social perspectives of their public participation experience; thirdly, an exploration of what the stakeholders considered the priority 'functional capabilities' for effective EA public participation and lastly, an evaluative survey using Likert scales of stakeholder's public participation experiences.

Each of these four methods is designed to interrogate aspects of the stakeholders' participation experience in specific, different and complementary ways. All contain the mutual focus of a stakeholder's capabilities and functionings. It is not presumed that these testing aspects of the methods encompass a comprehensive quantification of capabilities and functionings in the cases. The cases are selected for the theory building needs of developing a CA to EA public participation and therefore include explanatory and emergent aspects. All methods, including those with testing mechanisms, are therefore to be read as serving the theory building purpose of the research.

Efforts have been made from within the empirical research of the CA to produce a capability theory that would include, "an explicit 'metric' (that specifies which capabilities are valuable) and 'rule' (that specifies how the capabilities are to be distributed)" (Fukuda-Parr, 2003, p. 305). This research includes both the 'metric' and the 'rule' in its attempt to establish the capabilities that are valued by stakeholders in environmental assessment together with how stakeholders have realized capabilities and functionings in their participation experiences.

The research targets a balance in the overall methodological design and analysis between the metric and the rule for capabilities. This is intended to strengthen the coherence between the empirical findings and the purpose for those findings. It is however recognised that a perfect qualitative and quantitative balance is not possible. Where this balance is not possible, particularly in the results analysis, the research focuses more on the distribution of capabilities. Such findings are important as the methodologies test the pre-existing metrics proposed by Nussbaum (2003) and Clark (2003).

The operationalization of CA concepts is developed here in order to identify and potentially overcome aspects of capability related barriers to participation. In summary, Table 6 presents a preliminary list of typical barriers observed in the literature and in practice.

Table 6: The Aarhus Convention Practice Principles listed alongside 'The Central Human Capabilities'

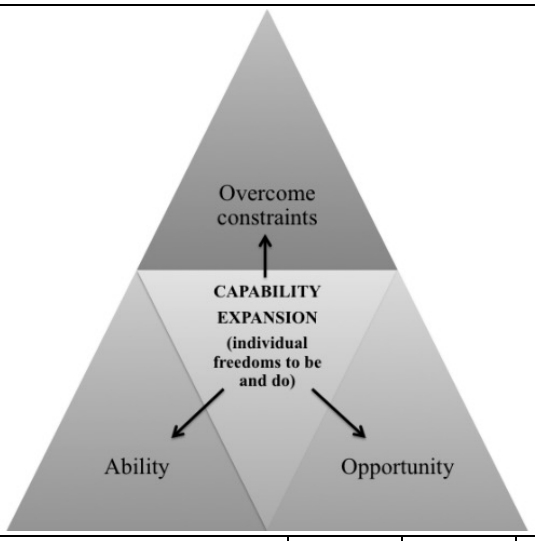
Aarhus Convention Principles (quoted in Hartley and Wood, 2005)	**Barriers to participation** (after Hartley and Wood, 2005)	**Barriers in the South African EA public participation context** (after Sowman *et al.*, 1995; Hughes, 1998; Rossouw and Wiseman, 2004; Scott and Oelofse, 2007; du Plessis, 2008; Murombo, 2008; de Wet and du Plessis, 2010; Kotze and du Plessis, 2010)
• Communication • Fairness • Timing • Accessibility • Information provision • Influence on decision making • Competence • Interaction • Compromise • Trust	• Poor public knowledge of planning, legal and waste licensing issues • Poor provision of information • Poor access to legal advice • Mistrust of the waste industry • NIMBY syndrome • Failure to influence the decision making process • Poor execution of participation methods • Regulatory constraint.	• Authorization efficiency: emphasis on foreign direct investment, job creation & economic growth • Changes to the expert/elitist approach to EA • Reduced length of comment periods • Emerging participatory democracy • Slow environmental authorization • Poorly understood *Locus standi* • No guarantee of formal participation • Invisible stakeholders • Inadequate scientific knowledge • Lack of public capacity support, education & empowerment. • HIV/AIDS • Language challenges • Inadequate internet and email connectivity • Inadequate personal time for participation • Poverty and unemployment

The macro social, political and economic barriers, together with the individual action constraints to participation, can be considered from a CA to reflect a failure of provisions for effective and equitable participation by stakeholders at an individual stakeholder level. This research presumes that fulfilment of the Aarhus principles in best practice public participation would align with the realisation of individual freedoms to meaningfully participate. Negatively put, capability deprivation resulting from identifiable obstacles (Table 6) would deleteriously impact upon stakeholders realising equitable and effective participation. Likewise, ineffective participation could militate against a stakeholder's ability to safeguard or realise their capabilities. Where the barriers to such capability realisation can be identified and removed, they should be. This is part of the wider developmental agenda of creating capabilities and enhancing people freedoms to choose the life they consider valuable. It concerns both institutional as well as personal capacity-orientated capabilities.

3.4.1.2 IDENTIFICATION OF CAPABILITY INDICATOR TYPES FOR MEASUREMENT

Anand *et al.* (2007, p. 57) identify that there are at least five types of capability indicators that can be explored. The types presented in Table 7 indicate the operationalization intention of each method. They also indicate the focus of the method for the type of indicator.

Table 7: Capability Indicators operationalized in this research



Capability Indicators (after Anand *et al.*, 2007, p. 57)		**Empirical or Normative focus**	**Method 1** Report Analysis	**Method 2** Q-method - Participation Experience	**Method 3** Ranking Q-method	**Method 4** Participation experience survey
Type 1	Externally orientated questions about '**Opportunity**'.	Empirical	Indirectly	Specifically	Specifically	Specifically
Type 2	Explicit questions about personal **'Ability'** aspects of capability.	Empirical	N/A	Specifically	N/A	Specifically
Type 3	Explicit '**Constraint**' questions.	Empirical	Specifically	Specifically	N/A	Specifically
Type 4	Probes combined with questions about '**Reasons**'.	Normative	N/A			
Type 5	Probes combined with a '**Universality** Assumption'.	Normative				

The first three 'types' indicate individual capabilities that demand methods that have an empirical focus that is 'methodologically individualist' (Sen, 2009). They focus on the individual's capability opportunity, ability and constraints. Table 7 includes a descriptor that designates the degree to which each method targeted a capability indicator Type. It provides a brief overview of how the methods target the Type 1 ('opportunity'), Type 2 ('ability') and Type 3 ('constraint') capability indicators.

Types four and five ask questions that consider the normative context of capabilities. Methodologically they require an evaluation that considers the reasons people hold for valuing certain capabilities (Type 4), and the potential generalizability of certain capabilities (Type 5). Although these would provide interesting insight for a capabilities approach to environmental assessment, they are excluded from the scope of this empirical research.

The triangulation potential of the methodology is indicated by how each method are designed to explore specific aspects of the indicator types. Table 7 designates that Methods 2, 3 and 4 include criteria that focus on the individual's 'opportunity' to participate in environmental assessment considering means and ends that they consider valuable. Method 2 involves the generation of social perspectives on the public participation experience. Method 3 considers the prioritisation that stakeholders placed on their 'opportunity' to participate in EA in their ranking of functional

capabilities. Method 4 includes statements that focus on 'opportunities' for participation in a survey using Likert scales evaluating stakeholder experience.

Table 7 indicates that Methods 2 and 4 include criteria that focus on the individuals 'ability' to participate in environmental assessment considering means and ends that they consider valuable. Table 7 further indicates that Methods 1, 2 and 4 include criteria that focus on the individuals 'constraints' to participate in environmental assessment considering means and ends that they consider valuable. In the Report Analysis, Method 1 evaluates the consideration of overcoming typical barriers to participation. Method 2 incorporates key Q-statements with 'constraint' criteria.

Each of these indicator Types (in Table 7) can justify an entire research agenda. One of the methods, focused on one Type of capability probe, followed through to its logical conclusion, could yield rich insight into that indicator. This research however targets a more general perspective of a capabilities approach to environmental assessment. It therefore targets the broader research agenda of three of the five types and considers each in light of the goal of potential consilience. The methods employed to do this interrogate targeted aspects of each Type for this purpose. They do not provide a comprehensive treatment of the research agenda indicated by the indicator Type. Nor do they exhaustively consider all possible capabilities, values or reasons people have for their participation capabilities. Recognising the limitations of case study research and the limitations of each method, cross-cutting indicator themes were incorporated into the methodology in order to triangulate the inference or findings of each method. The moderation of emphasis is determined by the capacity of that method and its application to evaluation of public participation.

In a complementary exploration to the categories suggested by Anand *et al.* (2007) the research includes a fourth empirical probe. Methods 1 and 3 explore the value ranking of capabilities. Indirectly, the normative ranking of capabilities can tangentially relate to both reasons and the universal assumption of the approach. However, the use of value ranking of capabilities here is very narrow and limited to the priority ranking of certain capabilities over others within the environmental assessment cases.

The indicators proposed for the measurement (Section 3.4) and quantification (Section 3.6) of capabilities and functionings in this research are preliminary indicators. They are constructed based on the consilience of the two approaches. They intend to provide insights into both the metric and the measure of capabilities through highlighting the human development considerations in participatory environmental assessment. Where possible, deference is made to established capabilities and participation survey indicators and response ranges. This is done in the first five statements of the Survey using evaluative Likert scales that incorporate statements applied in CA research from other contexts (Anand *et al.*, 2009) and in the use of Clark's (2003) functional capabilities in the Report Analysis and the ranking Q method. It is also done through the inclusion of a number of EA public

participation survey questions adapted from Webler *et al.* (2009) in the Q-method and the Survey using evaluative Likert scales. However, the majority of indicators are novel constructions both in their formulation as well as in their interdisciplinary application. This is due to the interdisciplinary demands of the research. The indicators and findings are therefore treated as preliminary and as open to future correction, refinement and calibration.

The indicators do not specifically measure well-being. Well-being is an important consideration for capabilities. Capabilities cannot be adequately considered without a reasonable degree of contemplation of the individual's state of well-being. However, the measurement of well-being requires differentiated indicators to those of capabilities (Anand *et al.*, 2009). Whereas well-being focuses on particular objective and subjective units and measures of human development, a capabilities focus considers the individual's agency. Alkire (2005) has identified that insofar as agency has intrinsic value to a person, it can be considered a part of well-being. However, she clarifies that a person's agency is not limited to their well-being. This does not negate the importance of CA research considering relevant and available well-being data. Rather, a focus on capabilities enhances the discussion of well-being attributes and states to consider what is achievable when providing for the autonomy of the individual in the evaluation. This acknowledges the potentials for the "responsible agency" of citizens to act in ways that are not predetermined by paternalistic categories of well-being (Sen, 1985, p. 204).

The well-being indicators that are empirically explored in a limited fashion in this research are based on self-assessed and volunteered demographic information in the respondent's metadata of the Survey using evaluative Likert scales. These consider the stakeholders limited and potential well-being indicators of employment, gender, age, ethnicity, residence, representation, first language, education and monthly income. They also include the survey exploration of personal capacity considerations indicated by the South African adapted Multidimensional Poverty Index (MDPI) (Stats-SA, 2014b) and the South African disability profile (Stats-SA, 2014a). These categories are not presumed to be comprehensive or exhaustive as well-being indicators in a way that would meet the thorough demands of the CA survey proposed by Anand *et al.* (2009) nor the CA well-being measures proposed by Alkire and Foster (2009). They provide a supportive information base for the evaluation of capabilities as they relate to public participation.

3.4.2 METHOD ONE: EA REPORT ANALYSIS

Wolf (2014) argues that judgement regarding capabilities requires two distinct forms of reflection: (1) a hermeneutics that can do justice to the breadth of human living and (2) a thin standard of universal human functional capabilities, by which to point out which insufficient conditions for

action undermine human well-being. The research combines the report analysis with empirical interviews and surveys in order to address these two forms of reflective exploration of the cases. The Report Analysis provides a hermeneutical base and context for the findings of the complementary empirical methods. The following three sections (3.4.2.1-3) describe and elaborate how the hermeneutical task of the Report Analysis (Method 1) is scoped to consider three review queries:

A. Stakeholder analysis for case study selection and survey respondent identification.
B. The technical coherence of capability related aspects in the reports.
C. The ways in which the reports articulate aspects related to capabilities.

3.4.2.1 REPORT ANALYSIS PART A: CASE STUDY AND STAKEHOLDER SELECTION

An analysis of the public participation reports is the first step taken by the research and provides the basis for case study and stakeholder identification through an analysis of the stakeholder databases and those considered to be 'active' in the process. It provides the reported context of stakeholder input in the decision making. For coherence purposes, the stakeholder identification process, together with the application of this subsection of Method 1 to each case, is presented and explained in Section 3.5.2 of this chapter and is not repeated here. The process identifies case studies, and then stakeholders within those cases, which contained a stakeholder population that includes an adequately differentiated population to provide a valid sample for the Survey using evaluative Likert scales (Method 4) as well as a broad variation in social perspectives for the Q-methodology (Method 2 and Method 3).

3.4.2.2 REPORT ANALYSIS PART B: TECHNICAL COHERENCE OF CAPABILITY RELATED ASPECTS

'Part B' of the Report Analysis is an investigation into how the EA reports, where relevant for that project, reflect ways in which the EAP has applied their mind to appropriate capability considerations that are relevant to effective stakeholder participation. As the environmental authorization[2] is based on the adequacy of these reports this research gives attention to the ways in which the EA reports reflect and integrate the necessary aspects of capability considerations. The purpose of this is to gain the reported project level understanding of the human well-being aspects that the EAP considered to be relevant to the decision making.

[2] "Environmental Authorization" is the term used in Chapter 4 of the NEMA (RSA, Act No. 107 of 1998) to describe the final environmental decision. In South Africa environmental decision making is made by the designated competent authority. This is usually a provincial government representative, for example from the provincial Department of Environmental Affairs and Development Planning, but can also apply to a national representative of the national Department of Environmental Affairs for decision making that considers national interests or particular listed activities.

The criteria for this critique are developed from what the literature identify as 'barriers' to participation. During this investigation, the analysis considers what has been omitted by a negligent, or possibly a deliberate, omission. Considering technical coherence, the analysis looks to identify aspects in the reports that follow through with participation relevant human well-being aspects that are identified and then mitigated for, or provided for. This could take the form of stakeholder support, identifying the removal of barriers to individual capabilities, barriers to participation or positive outcomes that would increase people's substantive freedoms. The socio-economic baseline data and the quality of that information base are critically queried as foundations for decision making.

What is reported does not necessarily reflect the realized experience of stakeholders and their experience of the EA process. Various aspects of the other methods are employed to verify the Report Analysis in this regard. Report writing is central to the practice of EA however. As decision making is based on the quality of the report it can be assumed that the report of a professional would, where appropriate, explicitly reflect on general and contextual practice challenges and display how and why they are identified, evaluated and mitigated. The task here is not to second-guess the focused scoping processes of the EAP's report (Morrison-Saunders *et al.*, 2014). The analysis considers the follow-through of the scoped human well-being aspects that are indicated to be relevant. This analysis is combined with reflection on the socio-economic baseline data and the quality of that information base for decision making.

The literature review identified that Sections 2 (4) d, f, g, and q of the NEMA reflect best practice and are founded upon the justice principle of identifying and removing obstacles to fair participation[3]. Equity criteria are evaluated in the Report Analysis based on how the 'barriers' to participation are identified, discussed, provided for and integrated into the reports. The Report Analysis involves the reading and evaluation of the EA reports by the researcher. Specifically with regard to the barriers identified in the literature, the Report Analysis considers each of the reports using the same rating and applies the evaluation to the following aspects:

Participation 'Barrier' was:

1. Identified by the EAP to be not relevant to public participation.
2. Identified and considered relevant in the report.
3. Discussed in report (specialist report, issues trail etc.).
4. Addressed through appropriate means and methods.

[3] "Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing must be pursued and special measures may be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination" (RSA Act No. 107 of 1998, Section 2(4) d).
"… all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation … [in EA]" (RSA Act No. 107 of 1998, Section 2(4) f).
"Decisions must take into account the interests, needs and values of all interested and affected parties, and this includes recognising all forms of knowledge, including traditional and ordinary knowledge" (RSA Act No. 107 of 1998 Section 2(4) g).
"The vital role of women and youth […] must be recognised and their full participation therein must be promoted" (RSA Act No. 107 of 1998, Section 2(4) q).

5. Integrated into the EA synthesis discussion.
6. Integrated into the Environmental Management Plan (EMP) mitigation and follow-up.

For each 'barrier', an evaluation is made for all relevant EA reports. A standardised rating scale is employed for the evaluation of the reports based on the frequency and emphasis given to each criterion in the report. This rating considers the degree that the selected criterion is 'Unclear' [0], 'Never' mentioned [1], 'Superficially' mentioned [2], 'Occasionally' mentioned [3], discussed 'In detail' [4] and discussed 'Substantially' [5] in the report. Although this is a detailed and slow process, the patterns observed reflect interesting report writing trends. The results presented in the Appendix 7.1 show how infrequently the reports show a contextual understanding of the likely institutional capability 'barriers' and how there is an inadequate follow through of identified 'barriers' into the final environmental reports, mitigation and support and the EMP. The reader is encouraged to consider how Appendix 7.1 displays how infrequently human well-being is considered in the specialist reports. This reflects the report writing challenge of integration.

The breadth of criteria that has been derived from the literature is broad but not considered by this research to be comprehensive. There are a multitude of social and economic considerations that could be considered relevant to individual capabilities that go beyond the scope of the criteria developed here. The selection of criteria is therefore scoped according to those aspects that can be related directly to human capabilities in the South African EA practice literature and the EA public participation literature. It is not expected that all cases would require explicit inclusion or reporting of, and the practice of, methods to overcome these barriers to participation. The analysis, however, does test for cases where reports show practice reflexivity of the EAP in this regard and the explicit contextual application.

In cases where the socio-economic profile of a population suggests that there would be some barriers to participation, it is interesting to reflect on the content of the report in addressing these as well as the assumptions in the literature regarding the significance of these barriers regarding equitable and effective participation.

3.4.2.3 REPORT ANALYSIS PART C: WAYS IN WHICH THE REPORTS ARTICULATE ASPECTS RELATED TO CAPABILITIES

'Part C' of the Report Analysis focuses on the ways in which the reports articulate aspects related to capabilities using Clark's (2003) framing and listing of South African 'functional capabilities'. General observations are made of the reports. Particular attention is paid to stakeholder articulations of capability related aspects in the issues trails. Following the initial exploratory evaluation, the discourse analysis tests for the emergence of types and forms of Clark's functional

capabilities. The discourse analysis programme 'NVivo'© is used to explore and identify capability related themes in the reports (Leitch and Palmer, 2010). One aspect of this exploration includes the use of word frequency analyses. Although the frequency of use of a word does suggest the emphasis of that word in the reports, it does not necessarily indicate how that criterion is used or its meaning (Mercer, 2004). The word frequency exploration is therefore used as an exploratory function and for the purpose of gaining a general impression of the main themes in the reports.

'Part C' of the Report Analysis involves the further reading of the reports by the researcher that is guided by keyword and word frequency explorations (Leitch and Palmer, 2010). A standardised rating scale is employed for the evaluation of the reports based on the frequency and emphasis given to those criterion use in the report. In similar fashion to 'Report Analysis Part B', the report articulations of functional capabilities are evaluated in 'Part C' of the Report Analysis according to whether the report identifies or discusses capability related aspects in ways that are, 'Unclear' [0], 'Never' mentioned [1], 'Superficially' mentioned [2], 'Occasionally' mentioned [3], discussed 'In detail' [4] and discussed 'Substantially' [5] in the report. Special attention is given to how stakeholders' framed problems and explained their values and justified their perspectives.

3.4.3 METHOD 2: Q-METHOD

The second method used by this research focuses on the variance in social perspectives of the public participation experience that is derived from a factor analysis of individual responses to 30 statements within a sorting frame. Q-method aims to reflect the variance in stakeholder opinion. Bell *et al.* (2012, p. 16) found that current EA research displays a poor awareness of "mapping the key issues of multiple perspectives held among stakeholders and the variable experiences which stakeholders would have during participatory events".

Q-method has been applied to EIA public participation focusing on the social perspectives of the stakeholders and with a specific focus on sustainability (Webler *et al.*, 2001; Webler and Tuler, 2006; Doody *et al.*, 2009; Webler *et al.*, 2009; Simpson, 2013). Q-method has also been applied to CA empirical research by Lelli (2001, p. 26) whose substantial work identified Q-method as "a promising preliminary step in deepening our understanding of the reliability and practicability of the capability approach". Q-method uses a form of principle component analysis, called a Factor Analysis, to generate the social perspectives held by stakeholders on a topic. Ontologically, therefore, this assumes that observed variables are linear combinations of some underlying dimension (Lelli, 2001).

The methodological steps involved in Q-method are well established and this research closely follows the instruction provided by a range of authors (Barry and Proops, 1999; Krueger *et al.*, 2001;

Eden *et al.*, 2005; S. Brown, 2006; Raadgever *et al.*, 2008; Doody *et al.*, 2009; Webler *et al.*, 2009). The explanation here focuses on an overview of the main stages and the critical decisions taken in applying Q-method to this research. A more detailed description and defence of the ontological and epistemological assumptions of the methodology can be found in S. Brown (1980); Barry and Proops (1999); Lelli (2001); S. Brown (2006) and Webler *et al.* (2009). Table 8 displays the 30 Q-statements constructed for the research.

Table 8: Q-statements listed with relevance to operationalization concepts

Code	**Q-statement**	**Operational relevance**	
		Respondent Capabilities	Respondent Functionings
Qs1	I did not feel comfortable and safe as a participant.		✓
Qs2	Other stakeholders built my self-esteem.		✓
Qs3	I had an equal chance to voice my concerns.	✓	
Qs4	All important stakeholders took part in the process.		
Qs5	Some affected parties could not participate for reasons that could have been overcome.		
Qs6	I did not have equal access to information.	✓	
Qs7	The discussion format allowed for inclusive participation.		✓
Qs8	The process did not exclude those less able to articulate their opinion.	✓	
Qs9	Financial resources were not provided to enable those who needed it to participate effectively.	✓	
Qs10	Negotiations (trade-offs) with other stakeholders were not possible for me.		✓
Qs11	My values and opinions were not discussed.		✓
Qs12	Participants were courteous and respectful of my perspectives.		
Qs13	Expert knowledge was not valued more highly than local knowledge.		
Qs14	The process does not improve participants' understandings of others' beliefs, values, and perspectives.		
Qs15	The stakeholder's interactions promoted a sense of accountability and sincerity.		
Qs16	I found it easy to build trust among the different participants during the process.		✓
Qs17	Learning as a group of stakeholders is only possible when power is willingly shared.		
Qs18	The discussions used language which I did not fully understand.	✓	
Qs19	It was easy for me to gain influence in technical discussions.		✓
Qs20	It was hard to gain influence in discussions but I still contested to gain more impact.		✓
Qs21	Discussions integrated social, ecological and economic perspectives.	✓	
Qs22	Stakeholders with higher education controlled the discussions more than others.		✓
Qs23	Stakeholders from wealthier positions controlled the discussions more than others.		✓
Qs24	Stakeholders that were 'politically connected' controlled the discussions more than others.		✓
Qs25	Public participation added quality to the sustainability of decisions being made.		
Qs26	I did not learn new things about environmental problems that society faces.		✓
Qs27	I was challenged to change a few things in my lifestyle to contribute towards sustainability.		✓
Qs28	The EIA public participation process was fair.	✓	
Qs29	The EIA public participation process was not run competently.	✓	
Qs30	Relevant information from certain groups was ignored.		✓

The columns on the right indicate the intentions and relevance of each Q-statement as they apply to an individual's capabilities and functionings. Those not indicated with a 'tick' are statements

relating to a general and best practice participation experience. They are not directly indicative or determined by the individual respondent's capabilities or functionings. There is not enough space to explain how each statement can potentially be linked, in a respondent mind, to the participation conditions, their capabilities, and their functionings or to certain aspects of citizen power. To demonstrate one example, Table 8 shows how Q-statement number three [Qs3], for example, is constructed to ask the stakeholder consider if they "had an equal chance to voice [their] concerns". This statement is relevant to the research objectives in that it has comment on the general public participation conditions as they were experienced by the stakeholder together with the individual's capabilities relating to a fair opportunity to effectively participate. It is also relevant to the provisions of the process to realise Nussbaum's (2003) tenth capability, the 'freedom of control of one's environment'. The operationalization relevance is not necessarily limited to those indicated with a 'tick' as a stakeholder may have in mind something different to the researcher. Without the respondent's feedback regarding their reasons for placement of that statement, it would be an oversimplification and paternalistic to presume as much. Unlike the survey using evaluative Likert scales, Q-statements can contain more than one object as it is the statement that is under question not the participant (Webler *et al.*, 2009). This Q-method follows orthodox implementation regarding measurement and quantification for a Q-methodology without significant statistical innovation and using PQMethod, which is the recommended statistical analysis package (Webler *et al.*, 2009).

Whereas the Survey using evaluative Likert scales focuses on identifying trends across a sample population, or 'R' responses, Q-method focuses on correlations in the positioning of statements to generate social perspectives on capabilities through reconstructing like-minded opinions on the capabilities into idealised types. Epistemologically, therefore, Q-method can be considered closer to a bottom-up empirical investigation as the statements are generated from the stakeholder's context and more importantly the stakeholders have more influence on the framing of the social perspectives due to the inter-subjective nature of the factor analysis (Barry and Proops, 1999). In contrast, although also intended to elicit some bottom-up responses, in the Survey using evaluative Likert scales there is limited influence the respondent can have on the framing of the outcomes. Q-statements are coded for the discussion as follows: Q-statement number two is abbreviated as [Qs2].

A pilot study combining the early iterations of this Q-method survey and a survey using Likert scales was conducted using an online platform called 'QsortWare' (Pruneddu, 2013; Pruneddu, 2015). This free online research platform was used to establish appropriate methodological and operationalization survey opportunities and limitations. Members of the 'LinkedIn EIA' community from over 47 different countries responded to the Q-method and Likert pilot surveys. This informed the research expectations regarding survey construction, Q-sort response times, data format, data handling, data analysis, data interpretation and results representation. Feedback from the pilot study

was applied to the revision of the fieldwork Q-method and a survey using Likert scales correcting the following key areas:

1. Scope and representativity of appropriate sample populations.
2. Methodological fine-tuning for the Q-method statements and the appropriate Likert response ranges.
3. Adjustment of Q-method ranges of agreement and disagreement.
4. Removal of Q-method statement double negatives.
5. Operationalization of CA concepts required significant fine-tuning and rephrasing to statements that were not ambiguous.
6. Establish data handling and processing procedures.
7. Explore potential data analysis options and the appropriate data analysis software.
8. Establish results, expectations and methods of presentation.
9. Translation and language corrections.

The Q-statements are created from a combination of sources. They include statements that are common to the experience of the stakeholders in the EA reports, statements drawn from the researcher's EIA public participation and Q-method research experience (Simpson, 2013), statements from academic Q literature that have been applied to EA public participation (Webler *et al.*, 2009) and statements created with infused capabilities and functionings concepts. A conventional Q-method follows five main steps. They include the following:

1. The creation of Q-statements.
2. The selection of Q-participants.
3. Conducting the Q-sort process.
4. Processing the data.
5. Interpreting the Factors

The minor adaptations for contextual application are in the construction of the Q-statements to include EA and CA concepts.

3.4.4 METHOD 3: ADAPTED RANKING Q-METHOD

Method 3 targets priority ends 'which are pursued with a drive'. Building on the work of Clark (2003) the third methodological approach taken by this research involves a modified Q study that establishes a ranking of highly valued capabilities. The research calls these 'priority functional capabilities'. Clark's (2003) ground-breaking CA research in Murraysburg and Wallacedene in the Western Cape of South Africa identified and ranked a normative evaluation of 38 different 'functional capabilities'. Robeyns (2006, p. 356) suggests three procedural criteria for the selection of capabilities:

1. Explicit formulation: The list should be made explicit, discussed and defended.
2. Methodological justification: the method that generated the list should be clarified, scrutinised and defended.

3. Different levels of generality: If a selection aims at an empirical application or is intended to lead to implementable policy proposals, empirical results from a limited number of cases do not necessarily directly translate into generalizable capabilities.

Anand *et al*. (2009) provide methodological guidance to this section through their demonstration that human capabilities can be measured with the aid of suitably designed statistical indicators. Items on Clark's list were selected in part due to their overlap with the validation research conducted by Anand *et al*. (2009) of many of Clark's functional capabilities. Their research verified many items on Clark's and Nussbaum's lists including 'Bodily Health', 'Bodily Integrity', 'Emotions', 'Practical Reason', 'Affiliation' and 'Control over one's environment' with controls of sex, demographics, personality and age. Using backward elimination for each these items, Anand *et al*. (2009) demonstrated strong evidence of a statistical link to subjective well-being. Subsequent analyses suggested that the relations were reasonably robust with respect to the addition of socio-demographic and personality variables. The substantive picture they obtain, then, is one in which life satisfaction is highly multivariate with respect to capabilities, a finding that underlines the value of the vector approach to welfare that Sen advocates as well as the multivariate treatment of poverty that is attracting increasing support. Their evidence also suggests that whilst there may be some gender and age differences, signs are generally the same, suggesting that any gender differences in capability life satisfaction relations are primarily quantitative rather than qualitative.

Anand *et al*. (2007) provide further methodological guidance to this section through their focus on the questions of whether and how capabilities can be measured. They also use a survey with Likert scales for all items on Nussbaum's list. They demonstrate ways in which capability data can be analysed assisting the validation procedures in the methodology adopted by this research. Many of the more significant dimensions of capability can be measured but it is worth acknowledging that these capability indicators may be particularly closely related to satisfactions with particular areas of life that are not fully considered in this evaluation.

The explicit formulation, the methodological justification and the contextual fit to South African society in Clark's (2003) empirical research allows for the reflective use and adaptation of Clark's list to this research. Although the list has many overlapping concepts with Nussbaum's (2003) list, Clark's list is developed through a bottom-up survey method and therefore informed more by South African values than the top-down normative approach underpinning Nussbaum's list. The ranking of Clark's list reflects the values of the South African poor urban communities they worked in. This aligns Clark's list with a more Senian formulation of capabilities. Clark, therefore, provides a South African list of previously identified capabilities, what he calls 'functional capabilities'. The use of Clark's list in this research in this way tests for the comparative variance in ranking of capabilities in the EA public participation context. A contrast between Clark's list and those of the wealthy and predominantly white participants that actively partake in EA is expected. The list employed for the Q-

sort part of this research focuses more on the stakeholder's normative values and not on functionings. This provides a useful distinction for the overall analysis with the following Survey using evaluative Likert scales, which focuses heavily on context and functionings. Clark's survey however did not use a factor analysis in the generation of his list of functional capabilities. The use of Q-method here allows for variance in sample response and correlations in rankings to reflect a variety of local social perspectives in the ranking. Establishing contextually defined capabilities is a central work of the CA. It is important to reflect a contextual prioritisation of the selected capabilities to inform the discussion of the generalisation of capabilities as well as the approach's application to EA practice.

Focusing on priority capabilities the methodology here intends to provide a comparison of capabilities with those methods and findings of Clark's normative evaluation. The Q-statements are referred to as 'fC' to distinguish them from the Q-statements of the earlier Q-method. This adapted Q-method follows orthodox implementation regarding measurement for a Q-methodology without significant statistical innovation (Webler *et al.*, 2009). The minor adaptation for contextual application is the selection of 'functional capabilities' for the Q-sort responses in the place of Q-statements. The Q-statements for this second adapted Q-method are coded for the discussion as follows: Q-statement number two is abbreviated as 'fC2'.

Depending on how they are interpreted, certain items on Clark's list can be considered to be capabilities, functionings or both functional capabilities (a hybrid of functionings and capabilities). The distinction between capabilities and functionings is useful for conceptual clarity but both are equally valuable to the evaluative purpose of the approach. Sen (1999, p. 131) argues that:

> The assessment of capabilities has to proceed primarily on the basis of observing a person's actual functionings, to be supplemented by other information. There is a jump here (from functionings to capabilities), but it need not be a big jump, if only because the valuation of actual functionings is one way of assessing how a person values the options she has.

This distinction is theoretically valuable. However, in practice, the distinctions between commodities (and their characteristics), human functioning and utility is less robust than Sen implies (Clark, 2005). Clark (2005) has demonstrated that there is greater overlap between the categories of commodities, functioning and utility than the current literature on the CA suggests. Sen's critiques of opulence and utility should be endorsed. Neither of these approaches have an informational base that is broad enough to represent all aspects of human development. The former is concerned with the material basis of well-being whereas the latter is preoccupied with mental states. Both these approaches can therefore provide fairly misleading guides to well-being (as Sen himself has argued) (Clark, 2005). In contrast, the CA is able to avoid these pitfalls as it concerns itself with the ability to live well across all spheres of life. It can accommodate material and mental aspects of development in addition to many other substantive freedoms, which are not directly covered by opulence or utility

inspired frameworks (for example, physical health, literacy, personal security, civil liberties and so on) (Clark, 2005).

Table 9 below displays the list of 30 Q-method statement capabilities selected for this research which are drawn from the work of Clark (2003).

Table 9: Priority Functional Capabilities selected for adapted ranking Q-method

'Functional capabilities' (fCs) selected for Q-method to establish priority functional capabilities (List is randomly distributed – as it appeared in survey)		Nussbaum's (2003) List
fC1	Job	✓
fC2	Capacity to think, reason and make choices	✓
fC3	Access to family planning	✓
fC4	Electricity	
fC5	To participate in political activities that affect your life	✓
fC6	Access to clean water and sanitation	
fC7	Family and friends	✓
fC8	Income and wealth	✓
fC9	Free time/recreation	✓
fC10	Determination, motivation, self-reliance	✓
fC11	Housing and shelter	✓
fC12	Personal safety and physical security	✓
fC13	Basic clothing	✓
fC14	Having children	✓
fC15	Transportation	✓
fC16	Exercise	✓
fC17	Fashionable clothing	
fC18	Land and cattle	
fC19	Playing/watching sport	✓
fC20	Sexual satisfaction	✓
fC21	An education	✓
fC22	Happiness	✓
fC23	Self-respect	✓
fC24	Property rights (the right to own personal property)	✓
fC25	Internet and Email connectivity [not in Clark's list]	
fC26	Sleep and rest	
fC27	Good health	✓
fC28	Living in a clean and natural environment	✓
fC29	Equal opportunities for personal advancement	✓
fC30	Freedom for self-determination	✓

Key

✓ Item included in Nussbaum's list.
X Clark's functional capability not used in this research.

Clark's 38 different 'functional capabilities' ranked in Murraysburg and Wallacedene, WC, RSA (Clark, 2003: 186) (List ranked according to Clark's hierarchy derived from normative evaluation)	
1	Jobs
2	Access to clean water and sanitation
3	Housing and shelter
4	Family and friends
5	Personal safety and physical security
6	An education
7	Happiness
8	Good health
9	Sleep and rest
10	**X** Fuel for cooking and heating [not used]
11	Access to family planning
12	Exercise
13	Capacity to think, reason and make choices
14	Sexual satisfaction
15	Basic clothing
16	Fashionable clothing
17	Freedom for self-determination
18	Income and wealth
19	**X** Consumer durable and luxury goods [not used]
20	Self-respect
21	Land and cattle
22	Living in a clean and natural environment
23	**X** Coca-Cola (or other fizzy drink) [not used]
24	Transportation
25	**X** (All weather) roads [not used]
26	Watching sport
27	Playing sport
28	Electricity
29	Free time/recreation
30	Having children
31	**X** Watching TV/going to the cinema [not used]
32	**X** Drinking alcohol [not used]
33	**X** Living long [not used]
34	**X** Smoking cigarettes [not used]
35	Property rights (the right to own personal property)
36	Equal opportunities for personal advancement
37	Determination, motivation, self-reliance
38	Participate in political activities that affect your life

Table 9 above helps to illustrate the value of not depending too heavily on Nussbaum's list for an operationalizable list of capabilities in the South African context. Nussbaum's (2003) list does not include [fC4], [fC6], [fC17], [fC18], [fC25] and [fC26] nor does her list include the six functional capabilities in Clark's list which are not used in this research. Nussbaum's list is also not articulated in a way the South African respondents did in Clark's research. It is anticipated that Nussbaum's list would not include contextually framed values such as 'Land and Cattle'. It is unexpected however that Nussbaum's list does not specify 'Electricity', 'Access to clean water and sanitation' and 'Sleep and rest'. It is not difficult however to relate each of these South African 'functional capabilities' to Nussbaum's second[4] and tenth[5] central human capabilities respectively. It is plausible therefore that Nussbaum would defend such exclusion on grounds of not wanting to over-specify her list in a way that would 'militate against general uptake' (Nussbaum, 2003, p. 40).The Q-method requires the list to be reduced to 30 'fCs' due to the time constraints of the interview process. Methodologically it also fits with the recommended respondent ratio (Webler *et al.*, 2009) generated by 13 Q-participants in the previous Q-method (Method 2). The 30 fCs selected for the adapted Q-method are chosen for their relevance to the EA public participation process and 8 excluded (indicated with an X in the second column of Table 9) are those considered not to be unimportant but as less applicable to the research aim.

The research has added [fC25] 'Internet and email connectivity' based on the prevailing EA practice in South Africa that relies heavily on stakeholders' online engagement with the process. Clark's normative ranking shown in the right column of Table 9, places 'jobs', 'access to clean water and sanitation' and 'housing and shelter' as the top three functional capabilities which reflect the priorities and values of communities in a South African urban and informal settlement (Clark, 2003, p. 186). Certain functional capabilities that are critical to the EA public participation process are ranked very low on Clark's list. For example the lowest ranked functional capability is 'Participate in political activities that affect your life' and 35th ranked is 'property rights' (Clark, 2003, p. 186).

The application of items on Clark's list is therefore conceptually guided by the overarching notion of a stakeholder's capability set: 'to participate effectively in choices that affect one's environment'. The functional capability set is located within an analytical frame for considering the agency and utility an individual can realistically achieve through engaging in the participation process. Methodologically, step-by-step instructions are clearly provided to ensure that the respondents understand this is how the list is applied in the surveys. Likewise, the reader is encouraged to interpret the evaluation and analysis in light of a stakeholder's capability set: 'to participate effectively in choices that affect one's environment'.

[4] Being able to have good health, including reproductive health. To be adequately nourished & to have adequate shelter.
[5] Being able to participate effectively in political choices that govern one's life.

3.4.5 METHOD 4: SURVEY USING EVALUATIVE LIKERT SCALES

The Survey using evaluative Likert scales focuses on 34 statements that targeted the individuals' 'capabilities' and 'functionings' in the context of that individual's public participation experience. The development of the Survey using evaluative Likert scales was informed by the pilot study and by EA public participation Likert-based empirical research by Garmendia and Stagl (2010) and was also informed by recent literature focusing on operationalizing the CA using Likert tools (Anand and van Hees, 2006; Anand *et al.*, 2007; Anand *et al.*, 2009). Anand *et al.* (2009) provide methodological guidance to this section through their demonstration that human capabilities can be measured with the aid of suitably designed statistical indicators.

In response to the early attempts to operationalize the CA in satisfaction and happiness research, Robeyns (2006, p. 351) argues that CA research should not primarily focus on people's mental states, but on "the effective opportunities that people have to lead the lives they have reason to value". The statements are phrased with this focus on realistic achievement through participating. General aspects that are investigated in the survey relate to the principles of the Aarhus Convention, individual capabilities, individual functionings and aspects of citizen power in participation. Through investigating these aspects the Likert statements are carefully crafted to also include capability indicator types what evaluate aspects of capability 'opportunity', 'ability' and 'constraint'.

The response range designed for the survey follows the standard 5-1 span where, 'All the time' = [5]; 'Fairly Often' = [4]; 'Occasionally' = [3]; 'Rarely' = [2]; and 'Never' = [1]. An option was provided for all responses to be labelled 'Unsure' and coded as [0]. The statements are designed to avoid double meaning, difficulty in understanding and leading questions. It is acknowledged that the specific objectives of the survey do place a degree of researcher influence on the potential response options. Likert statement number two is abbreviated as 'Ls2'.

In addition to the stakeholder's capabilities and functionings, the survey includes questions that consider collaboration with other stakeholders and the possibility for responses that might indicate 'socially dependent individual capabilities'. The columns on the right that correspond to each statement indicate the researcher's intention for how that statement was crafted for a particular research aim. Table 10 below displays the 34 response statements of the Survey using evaluative Likert scales.

Table 10: Survey using evaluative Likert scales

		Operationalization relevance					
		CA Concepts			Capability indicator types		
Code	**Survey using evaluative Likert scales: Questions** Response frame: All the time; Fairly Often; Occasionally; Rarely; Never [5-1]; [Unsure 0].	Capabilities	Functionings	General aspects	Opportunity	Ability	Constraint
Ls1	My idea of a good life is based on my own judgement	✓				✓	
Ls2	I have a clear plan of how I would like my life to be	✓				✓	
Ls3	I respect, value and appreciate other people	✓				✓	
Ls4	I tend to find it difficult to imagine the situation of other people	✓				✓	
Ls5	In general, I appreciate and value plants, animals and the world of nature	✓				✓	
Ls6	I am able to participate in environmental decision making that affects my life if I want to	✓			✓	✓	
Ls7	I was an active stakeholder in this process		✓				
Ls8	I was a passive stakeholder in this process		✓				
Ls9	I achieved more through collaborating with others		✓				
Ls10	Environmental assessment makes better decisions through public participation			✓			
Ls11	The public participation process in this environmental assessment was fair			✓			✓
Ls12	I considered the rights of future generations in my participation		✓				
Ls13	Other stakeholders made decisions with the needs of future generations in mind			✓			
Ls14	Decisions affecting future generations were adequate			✓			
Ls15	How often did the environmental assessment reflect this statement: “Do to future generations what you would have wanted previous generations to do to you”?	✓		✓			
Ls16	I found other stakeholders who shared my views		✓				
Ls17	The process provided opportunities where I could collaborate with other stakeholders	✓			✓		
Ls18	I was able to give a reasoned explanation of my perspective		✓			✓	
Ls19	I was able to change the mind of another stakeholder		✓			✓	
Ls20	I have changed my attitude through engaging in discussion with another stakeholder		✓				
Ls21	I was able to change the attitude of another stakeholder		✓			✓	
Ls22	My participation allowed me to influence what I consider valuable regarding my future environment		✓		✓	✓	
Ls23	The rights of future generations should be considered in EA			✓			
Ls24	It is fair to make decisions in an environmental assessment that will affect future generations			✓			
Ls25	My participation was not allowed in the formal decision making process		✓	✓			✓
Ls26	I felt bullied into accepting a development that was already going ahead		✓	✓			✓
Ls27	I was manipulated into thinking that my opinions count towards decision making		✓	✓			✓
Ls28	Meetings are just to rubber-stamp public (my) approval			✓			
Ls29	There was no assurance that my views would be listened to			✓			✓
Ls30	The public participation did not allow for negotiation with the developer			✓			
Ls31	The public participation was a top-down process but allowed for negotiation with the developer			✓	✓		
Ls32	I shared planning and decision making responsibilities with the developer		✓	✓		✓	
Ls33	I was empowered by the process to influence what I consider valuable regarding my future environment		✓	✓	✓	✓	
Ls34	I was disempowered by the process from influencing what I consider valuable regarding my future environment		✓	✓	✓		✓

Statements about the general public participation atmosphere are phrased according to certain aspects of best practice EA public participation (Palerm, 2010). They include reference to dialogue, collaboration and discussion in Statements Ls17, Ls29, Ls30 and Ls31[6]. Questions regarding the consideration of sustainability and future generations are highlighted in Statements Ls12, Ls13, Ls14

[6] [Ls17] The process provided opportunities where I could collaborate with other stakeholders; [Ls29] There was no assurance that my views would be listened to; [Ls30] The public participation did not allow for negotiation with the developer; [Ls31] The public participation was a top-down process but allowed for negotiation with the developer.

and Ls15[7]. Procedural fairness is considered in Statements Ls11 and Ls24[8]. Statement Ls14 considers the stakeholders perceived perspective of the adequacy of the decision making[9]. The stakeholder's degree of engagement as 'passive' or 'active' are reflected in Ls8 and Ls9 and reinforced by Statements Ls25 and Ls32[10]. The self-perception of 'active' or 'passive' is included in the survey to help control for the degree of each stakeholder's involvement. The degree of engaged and intentional activity of a stakeholder is hypothesised to have implications for functionings. The statements explicitly relating to capabilities, Statements Ls1, Ls2, Ls3, Ls4, Ls5 and Ls6[11] are drawn verbatim from the work of Anand *et al.* (2007, p. 70) who have demonstrated that a survey using Likert scales can be used to investigate a larger set of sixty capability indicators. Statement Ls1, Ls2, Ls3, Ls4, Ls5 and Statement Ls6 are articulations of Nussbaum's (2003) eighth and tenth 'central human capabilities'. These first six capability statements are selected out of Anand's list as a baseline regarding distribution in a population. They are also selected for their relevance to a stakeholder's conception of the good and for participatory actions. In this respect, Statements Ls1, Ls2 and Ls4 relate to Nussbaum's sixth capability "Being able to form a conception of the good and the engage in critical reflection about the planning of one's life". Statements Ls17 and Ls22[12] are created for this research with adaptation to the EA public participation context.

Statements designed to target functionings are Statements Ls7, Ls8, Ls9, Ls12, Ls16, Ls18, Ls19, Ls20, Ls21 and Ls22[13]. They aim to identify actions taken by the stakeholder within the public participation process that facilitated their participation experience in light of their capabilities. Statements Ls7, Ls8, Ls9, Ls12, Ls18 and Ls22 have an explicitly individual focus, whereas Statements Ls16, Ls19, Ls20 and Ls21 are phrased to include functionings that involve other stakeholders. Although Statement Ls18 is considered a functioning as it involves a stakeholder's

[7] [Ls12] I considered the rights of future generations in my participation; [Ls13] Other stakeholders made decisions with the needs of future generations in mind; [Ls14] Decisions affecting future generations were adequate; [Ls15] How often did the environmental assessment reflect this statement: "Do to future generations what you would have wanted previous generations to do to you"?

[8] [Ls11] The public participation process in this environmental assessment was fair; [Ls24] It is fair to make decisions in an environmental assessment that will affect future generations

[9] [Ls14] Decisions affecting future generations were adequate.

[10] [Ls8] I was a passive stakeholder in this process; [Ls9] I achieved more through collaborating with others; [Ls25] My participation was not allowed in the formal decision making process; [Ls32] I shared planning and decision making responsibilities with the developer.

[11] [Ls1] My idea of a good life is based on my own judgement; [Ls2] I have a clear plan of how I would like my life to be; [Ls3] I respect, value and appreciate other people; [Ls4] I tend to find it difficult to imagine the situation of other people; [Ls5] In general I appreciate and value plants, animals and the world of nature; [Ls6] I am able to participate in environmental decision making that affects my life if I want to.

[12] [Ls17] The process provided opportunities where I could collaborate with other stakeholders; [Ls29] There was no assurance that my views would be listened to; [Ls22] My participation allowed me to influence what I consider valuable regarding my future environment.

[13] [Ls7] I was an active stakeholder in this process; [Ls8] I was a passive stakeholder in this process; [Ls9] I achieved more through collaborating with others; [Ls12] I considered the rights of future generations in my participation; [Ls16] I found other stakeholders who shared my views; [Ls18] I was able to give a reasoned explanation of my perspective; [Ls19] I was able to change the mind of another stakeholder; [Ls20] I have changed my attitude through engaging in discussion with another stakeholder; [Ls21] I was able to change the attitude of another stakeholder; [Ls22] My participation allowed me to influence what I consider valuable regarding my future environment.

action, the articulation, 'I was able to give a reasoned explanation of my perspective' is developed out of Nussbaum's (2003) sixth capability "Being able to form a conception of the good and the engage in critical reflection about the planning of one's life".

Sen has continually refuted proposals that have proposed 'collective capabilities' (Evans, 2002) and remains a methodological individualist. He argues "it is important to give simultaneous recognition to the centrality of individual freedom and the force of social influence on the extent and reach of individual freedom" (Sen, 1999b, p. xiii). This research elects to follow his perspective regarding the collaborative aspects of public participation and distinguishes between individual functionings and statements regarding the general participation circumstance that may include socially dependent conditions. Statements Ls9, Ls16, Ls17, Ls19 and Ls21[14] and are designed to focus on what Sen (2002, p. 72) calls 'socially dependent individual capabilities'.

Statements considering intergenerational aspects (Statements Ls12, Ls13, Ls14, Ls15, Ls22, Ls23, Ls24)[15] are influenced by the work of Watene (2013) who argues that Nussbaum does not give adequate consideration to future generations and Gutwald *et al.* (2011) who motivate for the CA to include aspects of intergenerational justice. Their inclusion is not only because intergenerational considerations are an imperative for best practice EA but also, in support of Watene's (2013) proposition, to challenge and motivate for potential inclusion of future generations into the CA under Sen's (2009) justice theory. For the same two reasons, Statements Ls10, Ls13 and Ls23[16] have been included and framed to explicitly require the respondent to reflect on the adequacy of the stakeholder consultation process regarding the sustainability of decisions being made. This has been motivated for within the CA literature by Burger and Christen (2011) amongst others.

Respondents may provide the type or range of answer that they think the researcher is looking for rather than what more accurately reflects their situation or opinion (Eisenhardt and Graebner, 2007). This is a significant limitation to the potential findings of this research and is particularly highlighted in the design of evaluative Likert scales. In order to mitigate this limitation the evaluation of response ranges will consider the stability of the concepts and responses across the population. Outliers will thereby be controlled for to a limited extend through the comparative evaluation of the range of responses given for a particular statement. Opinion and subjective experience cannot be

[14] [Ls9] I achieved more through collaborating with others; [Ls16] I found other stakeholders who shared my views; [Ls17] The process provided opportunities where I could collaborate with other stakeholders; [Ls19] I was able to change the mind of another stakeholder; [Ls21] I was able to change the attitude of another stakeholder.

[15] [Ls12] I considered the rights of future generations in my participation; [Ls13] Other stakeholders made decisions with the needs of future generations in mind; [Ls14] Decisions affecting future generations were adequate; [Ls15] How often did the environmental assessment reflect this statement: "Do to future generations what you would have wanted previous generations to do to you"? [Ls22] My participation allowed me to influence what I consider valuable regarding my future environment; [Ls23] The rights of future generations should be considered in EA; [Ls24] It is fair to make decisions in an environmental assessment that will affect future generations.

[16] [Ls10] Environmental assessment makes better decisions through public participation; [Ls13] Other stakeholders made decisions with the needs of future generations in mind; [Ls23] The rights of future generations should be considered in EA.

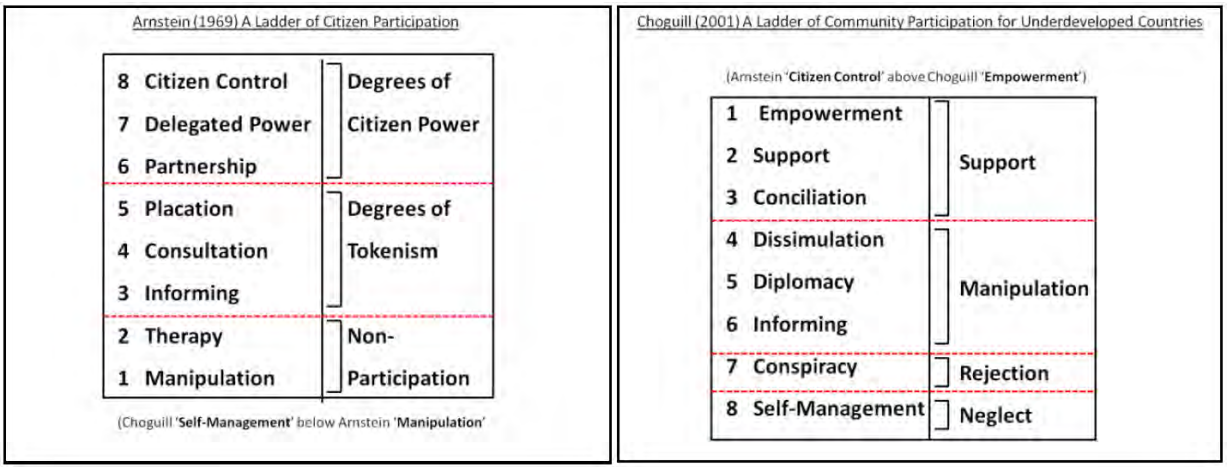
completely controlled for. As the self-evaluation of respondents' capabilities and functionings can be adaptive a positive skew, a negative skew or significant kurtosis in response ranges can provide interesting findings for comparative analysis (Anand *et al.*, 2009).

Although not a central focus of this research an understanding of aspects of citizen influence and power in the decision making were included using statements based on Arnstein's (1969) ladder. Although "fertile functioning" and "corrosive disadvantage" are useful concepts to describe contrastingly positive and negative situations that highlight capabilities, they both indicate oversimplified and arguably idealised cases of functionings; or lack thereof (Wolff and de-Shalit, 2013, p. 65). Such an exaggerated dualism can mask alternative understandings of agency that does not fit within such categories. A significant constraint that can act as a barrier to meaningful participation is the control of power in participation. The analysis, therefore, includes participation experiences that consider Arnstein's (1969) ladder of citizen power in participation.

Arnstein's concept of tokenism allows for a framework of power with which stakeholder actions can be considered. Actions that individuals consider valuable and which are related to their 'combined' and 'internal' capabilities can thereby be contrasted with the power dynamics associated with degrees of tokenism. It illuminates situations of 'participation' where the stakeholder does not necessarily greatly benefit ('fertile functioning') nor is adversely disadvantaged ('corrosive destruction') by the environmental assessment's process or outcomes. The types of tokenism that an analysis of citizen power can consider can be very useful concepts for understanding the realistic limits to the agency of the stakeholder to influence what they consider valuable through participating as a RI&AP. The consideration of tokenism is also useful to the CA for its consideration of the differential impact of 'combined' and 'internal' capabilities with its focus on the realized opportunities provided by the process.

Figure 7 below displays two conceptual ladders for understanding citizen power in public participation. The ladder on the left is Arnstein's ladder that has frequently been applied for the evaluation of public participation practice. The ladder on the right is a conceptual frame that Choguill developed for community participation in underdeveloped countries building on Arnstein's power notion.

Figure 7: Types of citizen power in public participation (Simpson, 2013)



Statements Ls26, Ls27, Ls28, Ls29, Ls30, Ls31 and Ls32 indicate different responses regarding aspects of citizen agency and power in the public participation. These statements indicate aspects of tokenism, manipulation or even non-participation. They were constructed using criteria from the work of Arnstein (1969) and Choguill (2001) who consider the different types of public participation procedure that affect citizen power in decision making processes. These criteria have been regularly applied to the evaluation of participation EA (O'Faircheallaigh, 2010; Simpson, 2013). The 'upper' rungs of Anrstein's ladder presented in Figure 7 characterize conditions of opportunity for individuals and the publics to significantly contribute to the decision making and outcomes of a development. Within such a framing the empowerment associated with situations of 'partnership' or 'delegated power' can be considered from a CA as 'opportunities' for capability realisation.

The Survey using evaluative Likert scales contained an addendum that included voluntary responses to personal information regarding poverty challenges and disability challenges experienced by each respondent. The survey addendum is presented in Appendix 7.5.

3.5 METHODOLOGICAL APPLICATION

This section describes how variables are used in qualitative empirical analysis and elaborates how the qualitative 'Method 1: Report Analysis' was contextually applied to and informed the case studies selected for this research.

3.5.1 CASE STUDIES

The selection of case studies has been guided by the theory building imperatives proposed by Eisenhardt (1991) and Eisenhardt and Graebner (2007). Cases are selected for both theory-testing and

addressing the theory building needs of this research. To this end, they are chosen for their potential to explore and display contextual reflection for inductive theory building as well as for deductive theory testing.

Eisenhardt and Graebner (2007) have demonstrated that theory building from cases is one of the "best bridges from rich qualitative evidence to mainstream deductive research". The theory building aim of the research is to develop a capabilities approach to environmental assessment through inductive enquiry and elaboration of the theoretical consilience of the two approaches. The theory testing aim of the research is the application of particular capabilities concepts through the selected methods, the purpose of which is to consider the stability and applicability of the operationalized concepts for application in the theoretical approach as well as for the consilience of the two disciplines. To this end, the building and testing methods of the approach intend to complement and mirror each other (Eisenhardt and Graebner, 2007).

This research recognises that case study research should involve "rich empirical descriptions of particular instances of a phenomenon" and be based on a variety of data sources (Yin, 1994). This detail is important as it is widely agreed upon that large secondary, quantitative data sources such as a national census or GDP data provide little evidence about capabilities (Kuklys, 2005). The research recognises that the rich level of detail needed for case study research and for understanding participant 'capabilities' and 'functionings' requires a limited number of cases. It also takes cognisance of Eisenhardt and Graebner's (2007) directive that having between two and five case studies can be beneficial for theory building as word limits force the discussion and theoretical reflection to follow the main trends across the cases rather than elaborating the contextual specificities which may not be as generalizable. Findings drawn from the case studies used may not be applicable to the broader generalisation of public participation in EA due to the contextual factors involved (Eisenhardt and Graebner, 2007).

3.5.2 METHOD 1: REPORT ANALYSIS – CASE STUDY AND STAKEHOLDER IDENTIFICATION

Theoretical sampling for multiple cases is more complicated than for the selection of a single case Eisenhardt and Graebner (2007). The selection process aimed to identify case studies, and then stakeholders within those cases that contained adequately differentiated populations that would provide a valid sample for the Survey using evaluative Likert scales as well as a broad variation in social perspectives for the Q-methodology. Ethnicity, gender and residence were population variables primarily and initially considered. It was found that comments and responses received in the reports and those recorded in meetings were often dominated by stakeholders who were white and male. Often these stakeholders were not necessarily local residents. The selection of respondents regarding

community residence, gender and ethnicity were therefore revised to reflect a considered representation of the local affected community. This provides a greater representation in the survey population to women and previously disadvantaged ethnic groups than is usually found in the stakeholder database.

Of further importance for selection is establishing the selection criteria on grounds that would yield viable results. The DEA&DP (2011, p. 20) guideline on public participation highlights that the NEMA defines "Registered interested and affected parties" (RI&APs) as:

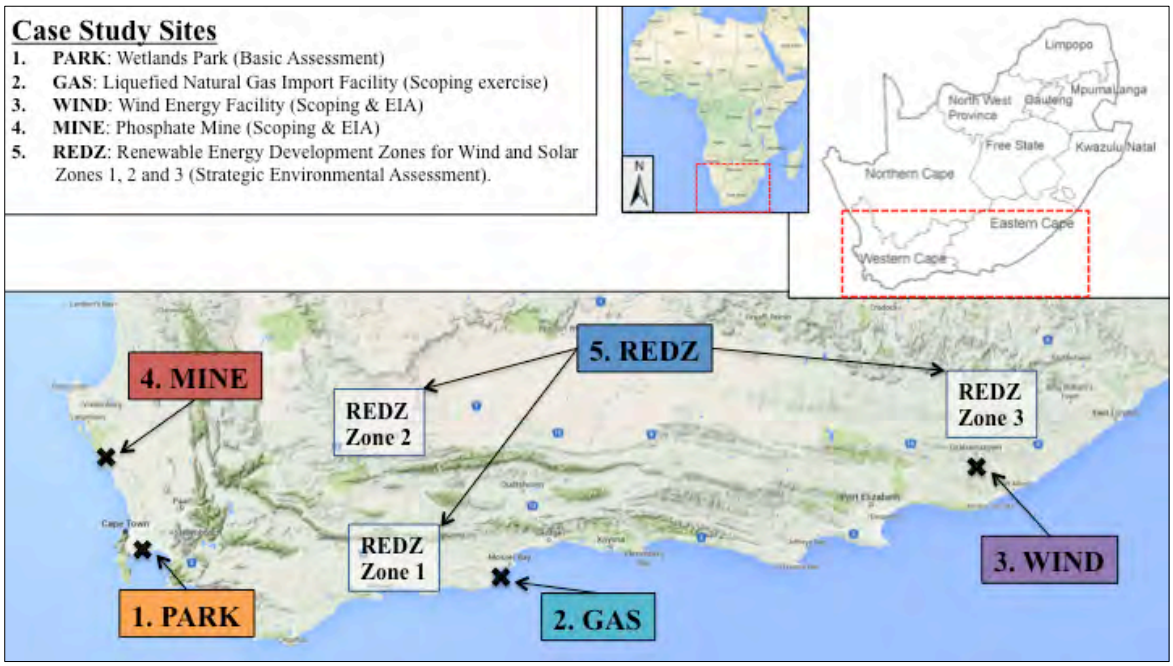
a) all persons who, as a consequence of the public participation process conducted in respect of an application, have submitted written comments or attended meetings with the applicant or EAP;
b) all persons who, after completion of the public participation process, have requested the applicant or the EAP managing the application, in writing, for their names to be placed on the register; and
c) all organs of state which have jurisdiction in respect of the activity to which the application relates.

In the South African EA practice, there is often a large proportion of RI&APs who do not actively engage with the public participation process. The selection of survey respondents was therefore based on the research criteria for stakeholders considered to be 'active' in the process and not just registered on the database. 'Active RI&APs' were identified as those stakeholders who were noted in the reports to have, 1) attended a stakeholder meeting, and/or 2) submitted a comment. It is acknowledged that there may be an unknown number of affected persons who were not included in these selection criteria. There are also possible exclusions of affected parties on the original RI&APs list provided by the case study consultant. Methodologically it was not possible to legitimately identify such persons. This is a limitation of the research regarding its reach to marginalised groups that face registration participation obstacles.

The research initially considered the merits of selecting three to five cases all with similar scale, type of development and type of assessment. In contrast, it was decided that criteria upon which to base the selection of cases should be a principally grounded search for processes that reflect a broad experience of types of EA public participation. The selection of different types of project is potentially problematic as some interview responses that require preference formed responses may be affected more by the nature of the project than the participation or the EA itself. A recognised limitation to this research is that it is not possible to adequately control for the influence this will have on the findings. One way the research has tried to handle this limitation is to identify cases from a broad spectrum of development types that reflect both generally desirable and undesirable projects. There are segments within the stakeholder groups who may not agree with what might be considered 'generally' desirable. Notwithstanding this limitation, the empirical focus is on the public participation processes within the cases and it is tentatively proposed that, within reasonable limits, it is possible to conduct an adequate participation process for both desirable and less desirable projects. Three of the five cases presented Table 11 below include three potentially desirable (PARK, WIND

and REDZ) and, depending on the perspective of a particular stakeholder group; three of the five are potentially undesirable (GAS, WIND and MINE). Table 11 presents the location of the five case studies selected for this research.

Table 11: Geographic location and characteristics of the five selected case studies



Case Study	EA Type	Scale	EA duration	Location	Developer	Industry	Characteristics of RI&APs
1. PARK: Wetlands Park Development	Basic Assessment	Local	19 months	Urban Coastal W. Cape	Local Government	Parks and Recreation Public Services	Informal Settlement Largely Black African I&APs
2. GAS: Offshore Liquefied Natural Gas Import Facility	Scoping Study	Local & National	18 Months	Urban Coastal W. Cape	Parastatal	Off-shore gas facility	Urban Local, regional & international 2nd home owners
3. WIND: Wind Energy Facility	Scoping & EIA	Local	16 Months	Peri-urban Inland E. Cape	Private	Wind Energy	Farming community, Peri-urban, Urban
4. MINE: Phosphate Mine	MPRDA S&EIA	Local	5 Months	Rural Coastal W. Cape	Private	Mining	Farming community Environmental activists 2nd home owners
5. REDZ: Renewable Energy Development Zones for Wind and Solar Power	Strategic EA	National	24 Months	Inland Rural W. & E. Cape	National Government	Wind & Solar Renewable Energy	Rural Farming communities Poor communities targeted for benefit.

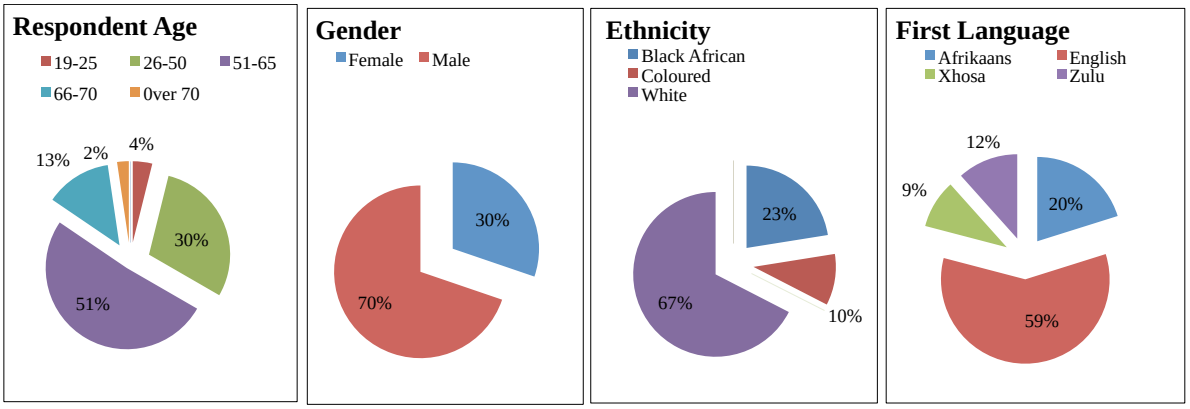
The colour associations indicated in Table 11 are standardised throughout the dissertation to assist the reader's association with the particular case reference. The research considered over 100 environmental assessments in varying degrees of detail before settling on eleven that were pursued more thoroughly, and finally selecting five case studies. During this stage, the methodology weighed up the benefits of different types of case study research. Following the guidance of Charmaz (2008),

up the benefits of different types of case study research. Following the guidance of Charmaz (2008), the criteria for theoretical sampling were established after tentative categories were identified and refined. Table 11 above shows how the criteria used to select the EA public participation cases reflect different types of environmental assessment, scales, locations and spatial extent, developers, assessment consultancies, industries and project types and lastly, a diversity of stakeholders both within each case study as well as across the cases. They are spatially located in the two southern Cape provinces of South Africa, namely the Western and Eastern Cape provinces. It was identified early on, that due to the differing standards of quality in the practice, it would be important to choose cases from different assessment consultancies in an effort to control for cases where the responses may be skewed due to an exceptionally high or low performing practitioner. Consultation with the case environmental practitioners and key stakeholders from the cases informed the case study selection process.

3.5.3 DEMOGRAPHIC CHARACTERISTICS OF THE SELECTED RESPONDENT STAKEHOLDERS

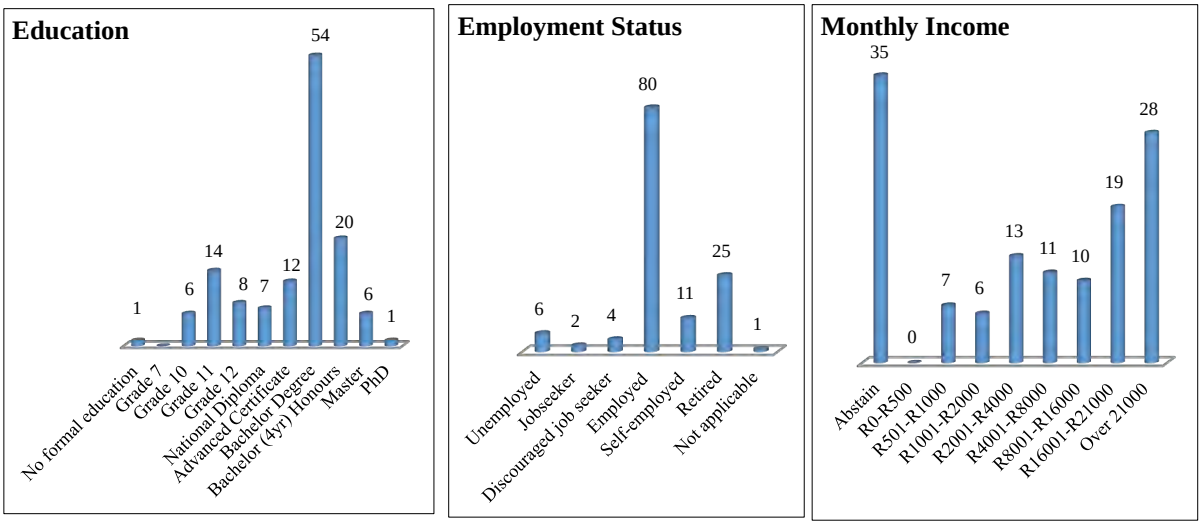
Characterization of the survey respondents is limited to the 129 selected respondents of the four EIA cases. The SEA case did not entail the same Survey using evaluative Likert scales due to different participation conditions and incomparable stakeholder particularities. Respondents from the four EIAs volunteered non-mandatory response information about themselves regarding their residence, representation, age, gender, ethnicity, education, employment situation, first language and monthly income bracket. Not all categories were responded to equally. However in some cases, sufficient responses were provided for certain categories to consider them as variables for the Likert survey responses. These variables are analysed across the cases as well as within each case study. Each of the following stakeholder characteristics is considered as a potential variable of the statements indicating capabilities and functionings.

Figure 8: Demographic characteristics of responding stakeholders



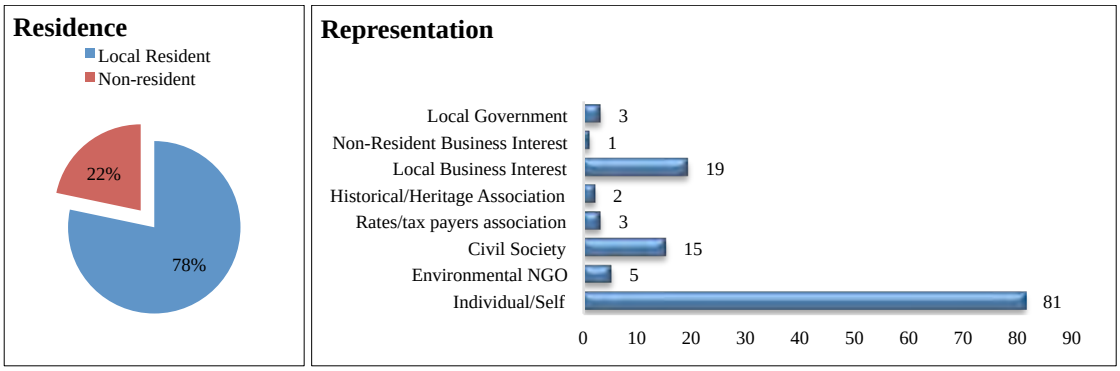
The average age of respondent stakeholder in this research is 55 years old with a range of 47 years between the oldest (73 years old) and the youngest (26 years old) stakeholder. Of the 129 respondents, 39 are female and 90 male. Figure 8 displays that three ethnicities are represented in the responses. These include 13 ‘coloured’, 29 ‘Black African’ and 87 Caucasian or ‘White’ persons. No respondents chose to abstain from indicating their ethnicity. 59% of respondents speak English as their first language. 20% of respondents speak Afrikaans, 12% isiZulu and 9% isiXhosa as their first language.

Figure 9: ‘Education’, ‘Employment’ and ‘Income’ characteristics of responding stakeholders



The range of educational level of the respondents indicated in Figure 9 reflects a broad range of South African society. 29 respondents indicated that they attained an education level of Grade 12 or lower. 73 respondents hold tertiary education qualifications up to a bachelor degree, and 27 respondents hold postgraduate tertiary qualifications. The majority of respondents are employed. 25 respondents are retired and 12 respondents categorise themselves in various forms of unemployment. 35 respondents abstained from indicating their monthly income. Seven respondents indicate that their personal monthly income was less than R1000 per month and a further six respondents indicate that they earn between R1000 and R2000 per month. The mean income bracket category for the respondents is R8001-R16000. The median income bracket category is also R8001-R16000.

Figure 10: 'Residence' and 'Representation' characteristics of responding stakeholders



Of the 129 respondents selected for the research, Figure 10 displays that 28 (22%) indicate that they are non-local and 101 (78%) as local residents. The majority of respondents (81) indicate that they represented themselves in the processes. However, 19 respondents represent a local business interest, 11 represent civil society groups and five represent environmental non-Governmental Organisations (NGOs).

A summary of the sample populations for each case is explained in Sections 3.5.3.1 to 3.5.3.5 below. This section provides the metadata to show the selection of stakeholders identified to be potential research respondents and their representativity as a sample population of the total stakeholder database of each case. A target sample population of between 10 and 20 percent of each total case's population of active stakeholders is identified. To give an indication of this range, the case with the largest number of 'active' stakeholders is the GAS case with 343 'active' stakeholders. From this case, the 61 selected respondents equate to 18% of the 'active' GAS stakeholders. The case the smallest number of 'active' stakeholders is the PARK case with only 73 'active' stakeholders. From this case, the 17 selected respondents equate to 23 percent of the 'active' PARK stakeholders. The respondent's residence, gender and ethnicity guided the respondent selection to represent South African national demographic characteristics in the sample populations more appropriately. Proportional estimates increase the selection of local residents, women and black African RI&APs in the sample populations compared with those in the registered stakeholder databases. This provides a more appropriate representation of previously disadvantaged groups in the surveys.

3.5.3.1 SURVEY RESPONDENT SELECTION FOR THE PARK CASE

Table 12 below presents a tabular explanation and rationale for the respondent selection criteria for the PARK case.

Table 12: Respondent selection criteria for the PARK case

Stakeholder Selection Criterion	Total RI&APs on Data Base	As % of total RI&APs	Total ACTIVE RI&APs	Active RI&APs as % of Total RI&APs criterion	Number RI&APs Selected Likert	Likert selection as % of total ACTIVE RI&APs on data base	Likert selection as % of total RI&APs on data base	Selected EA PP Q Sort	Selected fC Q Sort
PARK: RI&APs	**91**	100%	**73**	80%	**17**	23%	19%	**13**	**13**
Residence									
Community resident RI&APs	46	51%	46	63%	**16**	**35%**	35%	**13**	**13**
Total non-community RSA resident RI&APs	27	30%	27	37%	**1**	**4%**	4%	**0**	**0**
Total[17]	73		73		17			13	13
Demographics									
Total Female	34	37%	34	47%	**10**	**29%**	29%	**8**	**8**
Total Male	39	43%	39	53%	**7**	**18%**	18%	**5**	**5**
Total	73		73		17			13	13
Ethnicity									
Total Black African	40	44%	39	53%	**16**	**41%**	40%	**13**	**13**
Total Coloured	11	12%	10	14%	**1**	**10%**	9%	**0**	**0**
Total White	22	24%	24	33%	**0**	**0%**	0%	**0**	**0**
Total	73		73		17			13	13

Out of a total reported database of 91 RI&APs in the PARK Basic Assessment, the reports recorded approximately 73 'active' RI&APs of whom 29 attended meetings and 44 submitted comments. In many instances, those who submitted comments were also the same persons who attended the meetings. 73 active RI&APs represents 80% of the total registered RI&APs. A sample of 17 RI&APs (equating to 23% of the 'active' RI&APs and 19% of all RI&APs) are selected for the Survey using evaluative Likert scales. Drawn from this selection of 17 respondents, 13 RI&APs are selected for both the generation of social perspectives and the priority functional capabilities based on their Q-sorts. Although 51% of active stakeholders were local community residents, the 16 local residents selected for the surveys reflect 35% of the 'active' local resident RI&APs. Whereas 37% of 'active' RI&APs were female, the 10 women selected for the surveys reflect 29% of 'active' female RI&APs. Although black Africans only make up 44% of the 'active' RI&APs, the 16 selected black African stakeholders and one 'coloured' respondent make up 41% and 10% respectively of previously disadvantaged persons who actively participated in the BA. Representativity for 'active' white, male and non-residents are all adjusted in the sample of respondents, from the representation in the reports of 33% white, 53% male, 37% non-resident to 0% of white, 18% of male and 4% of non-resident I&APs respectively in the survey[18].

[17] Out of a total of 91 stakeholders in the data base, 73 RI&APs are accounted for regarding residence criteria. There are therefore 18 stakeholders for whom it was not possible to attribute residence criteria. This is considered missing data and applies to all the cases (37 missing in GAS; 45 missing in WIND, 86 missing in MINE).

[18] Out of a total of 91 stakeholders in the data base, 73 RI&APs are accounted for regarding residence criteria. There are therefore 18 stakeholders for whom it was not possible to attribute residence criteria. This is considered missing data and applies to all the cases (37 missing in GAS; 45 missing in WIND, 86 missing in MINE).

3.5.3.2 SURVEY RESPONDENT SELECTION FOR THE GAS CASE

Table 13 below presents a tabular explanation and rationale for the respondent selection criteria for the GAS case.

Table 13: Respondent selection criteria for the GAS case

Stakeholder Selection Criterion	Total RI&APs on Data Base	As % of total RI&APs	Total ACTIVE RI&APs	Active RI&APs as % of Total RI&APs criterion	Number RI&APs Selected Likert	Likert selection as % of total ACTIVE RI&APs on data base	Likert selection as % of total RI&APs on data base	Selected EA PP Q Sort	Selected fC Q Sort
GAS: I&APs	**1232**	100%	**343**	28%	**61**	18%	5%	**13**	**13**
Residence									
Community resident I&APs	870	73%	183	53%	**41**	**22%**	3%	**10**	**10**
Total non-community RSA resident I&APs	316	26%	160	47%	**20**	**13%**	2%	**3**	**3**
Total International resident I&APs	9	1%	0	0%	**0**	**0%**	0%	**0**	**0**
Total	1195	100%	343		**61**			**13**	**13**
Demographics									
Total Female	378	32%	66	19%	**13**	**20%**	1%	**5**	**5**
Total Male	799	68%	277	81%	**48**	**17%**	4%	**8**	**8**
Total	1177	100%	343		**61**				
Ethnicity									
Total Black African	281	24%	9	3%	**8**	**89%**	1%	**3**	**3**
Total Coloured	247	21%	13	4%	**10**	**77%**	1%	**4**	**4**
Total Indian/Asian	5	0%	1	0%	**0**	**0%**	0%	**0**	**0**
Total White	644	55%	320	93%	**43**	**13%**	3%	**6**	**6**
Total	1177	100%	343		**61**			**13**	**13**

Out of a total reported database of 1232 RI&APs in the GAS EIA Scoping study, the reports recorded approximately 343 ‘active’ RI&APs of whom 60 attended meetings and 283 submitted comments. 343 ‘active’ RI&APs represents 28% of the total registered RI&APs. A sample of 61 RI&APs (equating to 18% of the ‘active’ RI&APs) are selected for the Survey using evaluative Likert scales. Drawn from this selection of 61 respondents, 13 RI&APs are selected for both the generation of social perspectives and the priority ‘functional capabilities’ based on their Q-sorts. Although only 23% of ‘active’ RI&APs were local community residents, the 41 local residents selected for the surveys reflect 22% of ‘active’ local resident RI&APs. Whereas 19% of active RI&APs were female, the 13 women selected for the surveys reflect 20% of ‘active’ female RI&APs. Lastly, although black Africans only make up 3% of the ‘active’ RI&APs, the eight selected black African RI&APs make up 89% of ‘black’ previously disadvantaged persons and the 10 ‘coloured’ respondents make up 77% of ‘coloured’ previously disadvantaged persons who actively participated in the Scoping exercise. Representativity for ‘active’ white, male and non-residents are all adjusted in the sample of respondents, from the representation in the reports of 93% white, 81% male, 47% non-resident down to 13% of white, 17% of male and 13% of non-resident RI&APs respectively.

3.5.3.3 SURVEY RESPONDENT SELECTION FOR THE WIND CASE

Table 14 below presents a tabular explanation and rationale for the respondent selection criteria for the WIND case.

Table 14: Respondent selection criteria for the WIND case

Stakeholder Selection Criterion	Total RI&APs on Data Base	As % of total RI&APs	Total ACTIVE RI&APs	Active RI&APs as % of Total RI&APs criterion	Number RI&APs Selected Likert	Likert selection as % of total ACTIVE RI&APs on data base	Likert selection as % of total RI&APs on data base	Selected EA PP Q Sort	Selected fC Q Sort
WIND: RI&APs	**274**	100%	**207**	76%	**20**	10%	7%	**13**	**13**
Residence									
Community resident I&APs	195	85%	173	84%	**20**	**12%**	7%	**13**	**13**
Total non-community RSA resident I&APs	34	15%	34	16%	**0**	**0%**	0%	**0**	**0**
Total	**229**	100%	207		**20**			**13**	**13**
Demographics									
Total Female	71	30%	38	25%	**8**	**21%**	3%	**5**	**5**
Total Male	164	70%	115	75%	**12**	**10%**	4%	**8**	**8**
Total	**235**	100%	153		**20**			**13**	**13**
Ethnicity									
Total Black African	25	11%	9	5%	**3**	**33%**	1%	**3**	**3**
Total Coloured	12	5%	6	3%	**0**	**0%**	0%	**0**	**0**
Total White	190	84%	176	92%	**17**	**10%**	6%	**10**	**10**
Total	**227**	100%	191		**20**			**13**	**13**

With a total reported database of 274 RI&APs regarding the WIND S&EIA, the reports recorded approximately 207 ‘active’ stakeholders of whom 72 attended meetings and 81 submitted comments. In many instances, those who submitted comments were also the same persons who attended the meetings. 207 ‘active’ RI&APs represents 76% of the total registered RI&APs. A sample of 20 RI&APs (equating to 10% of the ‘active’ RI&APs) are selected for the Survey using evaluative Likert scales. Drawn from this selection of 20 respondents, 13 RI&APs are selected for both the generation of social perspectives and the priority ‘functional capabilities’ based on their Q-sorts. Although 84% of ‘active’ stakeholders were local community residents, the 20 local residents selected for the surveys reflect 12% of ‘active’ local resident stakeholders. Whereas 25% of ‘active’ stakeholders were female, the eight women selected for the surveys reflect 21% of ‘active’ female stakeholders. Lastly, although black Africans only make up 5% of the ‘active’ stakeholders, the three selected black African stakeholders make up 33% of ‘black’ previously disadvantaged persons who actively participated in the EIA. Representativity for ‘active’ white, male and non-residents are all adjusted in the sample of respondents from the representation in the reports of 92% white, 75% male, 16% non-resident down to 10% of white, 10% of male and 0% of non-resident respectively.

3.5.3.4 SURVEY RESPONDENT SELECTION FOR THE MINE CASE

Out of a total reported database of 1672 RI&APs for the MINE case, the reports recorded approximately 170 'active' stakeholders of whom 127 attended meetings and 43 submitted comments. In many instances, those who submitted comments were also the same persons who attended the meetings. 170 'active' RI&APs represents 10% of the total registered RI&APs. Table 15 below presents a tabular explanation and rationale for the respondent selection criteria for the MINE case.

Table 15: Respondent selection criteria for the MINE case

Stakeholder Selection Criterion	Total RI&APs on Data Base	As % of total RI&APs	Total ACTIVE RI&APs	Active RI&APs as % of Total RI&APs criterion	Number RI&APs Selected Likert	Likert selection as % of total ACTIVE RI&APs on data base	Likert selection as % of total RI&APs on data base	Selected EA PP Q Sort	Selected fC Q Sort
MINE: RI&APs	**1672**	100%	**170**	10%	**31**	18%	2%	**13**	**13**
Residence									
Community resident RI&APs	371	23%	130	76%	**24**	**18%**	6%	**10**	**10**
Total non-community RSA resident RI&APs	1215	77%	40	24%	**7**	**18%**	1%	**3**	**3**
Total	1586		170		**31**				
Demographics									
Total Female	530	33%	62	36%	**8**	**13%**	2%	**4**	**4**
Total Male	1056	67%	108	64%	**23**	**21%**	2%	**9**	**9**
Total	1586		170		**31**			**13**	**13**
Ethnicity									
Total Black African	160	10%	20	12%	**2**	**10%**	1%	**2**	**2**
Total Coloured	46	3%	18	11%	**3**	**17%**	7%	**2**	**2**
Total White	1380	87%	132	78%	**26**	**20%**	2%	**9**	**9**
Total	1586		170		**31**			**13**	**13**

A sample of 31 RI&APs (equating to 18% of the 'active' RI&APs) are selected for the Survey using evaluative Likert scales. Drawn from this selection of 31 respondents, 13 RI&APs are selected for both the generation of social perspectives and the priority 'functional capabilities' based on their Q-sorts. Although 23% of 'active' stakeholders were local community residents, the 24 local residents selected for the surveys reflect 18% of 'active' local resident stakeholders. The eight women selected for the surveys reflect 13% of 'active' female stakeholders. Lastly, although black Africans only make up 12% of the 'active' stakeholders, the two selected black African and three selected 'coloured' stakeholders make up 10% of 'black' previously disadvantaged persons and 17% of 'coloured' previously disadvantaged persons who actively participated in the MINE case. Representativity for 'active' white, male and non-residents are all adjusted in the sample of respondents, from the representation in the reports of 87% white, 67% male, 77% non-resident, down to 20% of white, 21% of male and 18% of non-resident respectively.

3.5.3.5 SURVEY RESPONDENT SELECTION FOR THE REDZ CASE

Out of a total reported database of 65 RI&APs regarding the three REDZ zones, the reports recorded approximately 62 'active' stakeholders of whom 38 attended meetings and 24 submitted comments. In many instances, those who submitted comments were also the same persons who attended the meetings. 62 'active' RI&APs represents 95% of the total registered RI&APs for these renewable energy development zones. Table 16 below presents a tabular explanation and rationale for the respondent selection criteria for the REDZ case.

Table 16: Respondent selection criteria for the REDZ case

Stakeholder Selection Criterion	Total RI&APs on Data Base	As % of total RI&APs	Total ACTIVE RI&APs	Active RI&APs as % of Total RI&APs criterion	Number RI&APs Selected Likert	Likert selection as % of total ACTIVE RI&APs on data base	Likert selection as % of total RI&APs on data base	Selected EA PP Q Sort	Selected fC Q Sort
REDZ: RI&APs	**65**	100%	**62**	95%	**26**	42%	40%	**13**	**13**
Residence									
Community resident RI&APs	34	52%	34	55%	**20**	**59%**	59%	**10**	**10**
Total non-community RSA resident RI&APs	31	48%	28	45%	**6**	**21%**	19%	**3**	**3**
Total	65		62		26			13	13
Demographics									
Total Female	30	46%	11	18%	**10**	**91%**	33%	**6**	**6**
Total Male	35	54%	51	82%	**16**	**31%**	46%	**7**	**7**
Total	65		62		26			13	13
Ethnicity									
Total Black African	8	12%	5	8%	**2**	**40%**	25%	**2**	**2**
Total Coloured	1	2%	1	2%	**1**	**100%**	100%	**1**	**1**
Total White	56	86%	56	90%	**23**	**41%**	41%	**10**	**10**
Total	65		62		26			13	13

A sample of 26 RI&APs (equating to 42% of the 'active' RI&APs and 40% of total RI&APs) are selected for the Survey using evaluative Likert scales. Drawn from this selection of 26 respondents, 13 RI&APs are selected for both the generation of social perspectives and the priority 'functional capabilities' based on their Q-sorts. Although 52% of 'active' stakeholders were local community residents, the 20 local residents selected for the surveys reflect 42% of 'active' local resident RI&APs. Whereas 18% of 'active' stakeholders were female, the 10 women selected for the surveys reflect 91% of 'active' female RI&APs. Lastly, although black Africans only make up 8% of the active stakeholders, the two selected black African and 1 selected 'coloured' stakeholders make up 40% of 'black' previously disadvantaged persons and 100% of 'coloured' previously disadvantaged persons who actively participated in the REDZ. Representativity for 'active' white, male and non-residents are all adjusted in the sample of respondents, from the representation in the reports of 90% white, 82% male, 45% non-resident down to 41% of white, 31% of male, 21% of non-resident respectively.

The selection of stakeholders is based on consultation with the practitioners responsible for the case studies. Careful attention is paid to the selection of stakeholders within the database of

registered interested and affected parties and the designing of appropriate methodologies to adequately survey the range of stakeholders therein. This research recognises that the EAP compiled database does not necessarily represent the full scope of interested and affected persons who might consider themselves legitimate stakeholders, many of whom may not be aware of their *locus standi* rights regarding a particular EA public participation process.

The online aspects of the methodology are designed to engage the range of stakeholders in the same way that the public participation process does; however a major limitation to the research is that it is not appropriate to commenting on the views of stakeholders outside the EA 'registration' paradigm. Face-to-face research was conducted to gain the perspective of the 'invisible' stakeholders that were not comfortable with the online format and to therefore extend the analysis to a fuller and more appropriate representation of South African society. In some cases (Case 1: PARK and Case 2: GAS) the research went beyond the RI&APs database in an effort to overcome this bias and find affected parties that fit with the diversity requirements of the research. These attempts mitigate some of the limitations however they cannot perfectly justify the representation of respondent stakeholders.

Within the EA processes for EIA and SEA, there are varying degrees of stakeholder involvement in the temporal progression of a proposed development. It is commonly agreed for best practice that stakeholder involvement in implementation, follow-up and monitoring is vital for environmental governance (Arts *et al.*, 2001). This research confines the scope of its EIA study to the public participation within the decision making process from commencement up to the point of the granting of (and possible review of) the proposal's environmental authorization. Likewise, the scope of the REDZ study is limited to the period of conception of the SEA up to the final report publication. This research, therefore, is not representative of the subsequent operation, implementation, monitoring and evaluation aspects of the EIA process. It targets the central and, based on current practice, most active participatory decision making windows of the process.

3.6 QUANTIFICATION

This section describes Methods 2, 3 and 4 as they were applied to the cases. Each of these methods follows orthodox implementation regarding measurement and quantification for a survey using Likert scales and Q-methodology without significant statistical innovation. They do however have minor adaptations for the contextual application. This research concentrates on 1) the evaluation of public participation, and 2) the integration of relevant human development and well-being consideration in environmental assessment. A meaningful participation process is expected to augment the identification of what can be considered 'relevant'.

3.6.1 METHOD 2: Q-METHOD

From each case study, 13 respondents were selected for the generation of social perspectives using a standard Q-method. Normally a ratio of 3 statements to 1 respondent (3:1) is used and many Q studies involve between 12 and 20 Q-participants (Webler *et al.*, 2009). For 30 Q-statements, 13 respondents provide an appropriate fit for the methodology at a ratio of 2.3:1, which could generally expect to generate between two and four social perspectives (Webler *et al.*, 2009). The criteria for respondent selection were based on the research objective of the variance in social perspectives that are inclusive of diverse views. Respondents were selected based on diversity in ethnicity, age, gender, residence, representation and educational level. Respondents were also selected on the grounds of their observed amount of activity in the process and if they had strongly held positions. The respondents are provided with 'focalizing' instructions[19] to sort the 30 statements into a frame in what is called in the methodology a 'Q-sort' as they reflect on their participation experience in that particular case study. The Q-statements are placed by the respondent in accordance with their agreement, disagreement or ambivalence towards that particular Q-statement.

Figure 11: Example of Q-sort – Respondent 3 GAS Scoping EA (GAS-003)

Strongest Agreement			Agreement	Ambivalence	Disagreement		Strongest Disagreement	
4	**3**	**2**	**1**	**0**	**-1**	**-2**	**-3**	**-4**
Qs6	Qs11	Qs9	Qs10	Qs28	Qs4	Qs25	Qs15	Qs3
Qs1	Qs29	Qs5	Qs17	Qs16	Qs22	Qs18	Qs2	Qs7
	Qs24	Qs30	Qs20	Qs13	Qs12	Qs19	Qs21	
			Qs14	Qs23	Qs26			
				Qs27				
				Qs8				

The example in Figure 11 shows that respondent GAS-003 from the GAS case agreed most strongly with statements Qs6 and Qs1[20], as well as statements Qs11, Qs29 and Qs24[21]. It also shows that they disagreed most strongly with statements Qs3 and Qs7[22], followed by statements Qs15, Qs2 and Qs21[23]. In the generation of the social perspectives, the Factor Analysis gives greater emphasis to those statements that are placed furthest from the centre in order to reflect this strength of opinion (Webler *et al.*, 2009).

The foundation for this method is grounded on psychological research which has shown that focusing on issues respondents feel most strongly about generates greater coherence and greater

[19] **Q-sort focalizing statement:** Instructions to the respondent. 'Please sort the following 30 capabilities according to your participation experience. It may be easiest to start with the two statements you agree with most – place them in the +4 column of 'strongest agreement'. Then find the two statements you disagree with their most and place them in the -4 column. Then move onto statements that you have strong feelings about and place them within the sorting frame. Finally, place the statements that you are ambivalent towards in the remaining columns'.

[20] [Qs6] Access to clean water and sanitation. [Qs1] Job.

[21] [Qs11] Housing and shelter. [Qs29] Equal opportunities for personal advancement. [Qs24] Property rights (the right to own personal property).

[22] [Qs3] Access to family planning. [Qs7] Family and friends.

[23] [Qs15] Transportation. [Qs2] Capacity to think, reason and make choices. [Qs21] An education.

reliability in the results (Webler *et al.*, 2009). Although the respondent may agree with more than half the statements, thereby moving the hypothetical 'zero point' away from the conventional centre, the relativity of the sort frame ensures that this is only true insomuch as the statement immediately to the left of that statement is agreed with more (S. Brown, 1993; 2006). The social perspectives are generated using only those statements that are placed in the (+4 and +3 agreement) columns and the (-4 and -3 disagreement) columns in order to precipitate the salient and strongly held beliefs.

The computations of the Factor Analysis with the step-by-step workings are in Appendix 7.2. Once all the Q-sorts are entered into the PQMethod computer programme the data is subjected to a principle component analysis based on a correlation matrix of the Q-sorts. The end product being idealised sorts, or 'Factors' that the researcher then needs to interpret to generate the social perspectives. Factor interpretation is a slow and delicate process that takes a high degree of insight into the individual stakeholder Q-sorts, as illustrated in a GAS case social perspective in Table 17 below.

Table 17: Example of Factor Interpretation – Factor 4 of the GAS case study (Appendix 7.3.2)

No.	**Factor 4 Agreement Statements (GAS-PPPro)**	**Z- Score**	**Column**
Qs1	I did not feel comfortable and safe as a participant.	1.759	+4 (strongest agreement)
Qs22	Stakeholders with higher education controlled the discussions more than others.	1.759	+4 (strongest agreement)
Qs3	I had an equal chance to voice my concerns.	1.319	+3
Qs11	My values and opinions were not discussed.	1.319	+3
Qs14	The process does not improve participants' understandings of others' beliefs, values, and perspectives.	1.319	+3
No.	**Factor 4 Disagreement Statements (GAS-PPPro)**	**Z- Score**	**Column**
Qs15	The stakeholder's interactions promoted a sense of accountability and sincerity.	-1.759	-4 (strongest disagreement)
Qs16	I found it easy to build trust among the different participants during the process.	-1.759	-4 (strongest disagreement)
Qs8	The process did not exclude those less able to articulate their opinion.	-1.319	-3
Qs13	Expert knowledge was not valued more highly than local knowledge.	-1.319	-3
Qs7	The discussion format allowed for inclusive participation.	-1.319	-3
No.	**Factor 4 - Statistically significant DISTINGUISHING statements (GAS-PPPro)**	**Z- Score**	**Column**
Qs1	I did not feel comfortable and safe as a participant.	1.759	**+4**
Core Belief			
I did not feel comfortable and safe as a participant, stakeholder's interactions did not promoted a sense of accountability and I found it difficult to build trust among the different participants.			
Secondary Belief			
The public participation process was not run competently nor considered fair. I found it difficult to build trust among the different participants during the process and stakeholder's interactions did not promote a sense of accountability and sincerity.			

As Table 17 illustrates the factor interpretation involves generating a coherent description of the social perspective based on the emphasis placed on that statement's Factor Analysis Z-Score. A Z-score is a measure of how far a statement lies from the middle of a distribution within a factor: a larger Z score indicates a more strongly held opinion and a lower Z-score a more ambivalent opinion (Webler et al. 2009). The factor analysis may identify a 'statistically significant distinguishing statement'. Table 17 displays that Statement Qs1 is identified as a statement that characterises this

social perspective as distinct from the other Factors the strong agreement with this statement. The Factor interpretation starts with the statistically significant distinguishing statement and the statements that are most strongly agreed with to establish the social perspective's 'Core Belief'. After this, the interpretation considers statements that are most strongly disagreed upon and those with a lower Z-Score to create one or more 'Secondary Belief'.

As Table 17 illustrates, this research elects to reflect the articulation of the constituent Q-statements directly in the interpretation. Although this can result in phrasings that might be articulated in non-colloquial ways, this is done to remain closer to the state of mind of the respondent in the Q-sort, and not impose an undue influence on the Factor through the researcher's rephrasing.

It is common for a 'Core Belief' to emerge with and a 'Secondary Belief' that is sometimes, but not always related to the Core Belief. In this case, the Core Belief of Factor 1 of the MINE is generated from the combination of that Factor's placement of Q-statements Qs6, Qs10 and Qs20. This indicates the personal reflection of the stakeholders' experience, capabilities and functionings. The Secondary Belief focuses more on the merits of the procedural process with the positive placement of Q-statements Qs30, Qs25, Qs7 and Qs13. This is corroborated by the negative placement of Q-statements Qs9 and Qs28 to generate the social perspective.

When considering the plurality of experience and values it is important to draw on a wide empirical base and hence the use of the four methods applied in this research. Sen (1990, p. 484) has motivated for the possibility of reducing a large list of potentially relevant components "to arrive at a more focused picture" of the individual's life experience. The 'Core' and 'Secondary Beliefs' of Q-method provide a useful means by which to account for significant variations of personal experience yet crystallize the social perspective to reflect stakeholder experience within a few sentences. Lelli (2001, p. 5) observes that a "major methodological rationale for the adoption of factor analysis relates, therefore, to some sort of rationalisation of the doings and beings to be considered". When these social perspectives are compared back with individual Q-sorts that made up the Factor, with a focus on the strongly held statements, reflection can be made on the relationship between individual capabilities and functionings as they relate to the larger sample. This method is therefore very useful for the task of empirical research that focuses on the individual within the contextual setting of a case study.

Q-method research that explores the discourses of support and objection in the case of an offshore wind farm proposal in Northern Ireland found that understanding the motivation to either object or support a wind farm proposal defies simple explanation (Ellis *et al.*, 2007). Ellis *et al.* (2007, p. 30) conclude that despite much work in the field, these are "ultimately, matters that reflect deep values and conviction" and that there is a need for "much deeper understanding" of the human dimensions of all sides of the conflict. Wolsink and Breukers (2010, p. 535) agree with the findings of

Ellis *et al.* (2007) but found that the most successful onshore wind power development proposals encountered in their Q-method research were associated with good public participation processes where the approach focused on, "collaborative perspectives with more emphasis on local issues and less on the interests of the conventional energy sector". The CA is presented here as a useful unit of analysis to explore these aspects of individual and local values in participatory EA through the lens of capabilities and functionings.

This research aligns with the suggestion of Webler *et al.* (2009) that the results of Q-method can occasionally inform the emphases given to the 'R' correlation testing of variables across a sample population. In addition to the statistical validity of the sample population, the significance of the findings in the Survey using evaluative Likert scales is not limited to, but is contextualised and explicated by, the previously described social perspectives. Sequentially and tactically, therefore, the fourth method employed by this research is a survey using Likert scales.

3.6.2 METHOD 3: RANKING Q-METHOD

The Q-sorts for Method 3 were completed by same 13 respondents who participated in the previous Q-method ('Method 2'). This section does not repeat the description of the process followed by the Q-method procedure, as the technical steps followed were the same for both Method 2 and Method 3. A brief explanation is necessary however regarding the aspects of adaptation used for establishing 'priority functional capabilities' (fCs). This adapted Q-method was used to establish a ranking of the capabilities that the stakeholders considered to be most valuable during their public participation experience[24]. It aims to identify which capabilities are valued more than others by a stakeholder participating in an environmental assessment. The sorting frame, therefore, is adapted to place the most valuable fC on the far left with descending importance placed on the cells to the right.

Figure 12: Example of Q-sort – Individual Q-sort example from respondent 'PARK-002'

Essential/Highest Value ←									Relatively Less Valuable
10	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
fC5	fC28	fC1	fC25	fC8	fC11	fC9	fC23	fC16	fC17
	fC21	fC6	fC10	fC2	fC26	fC3	fC20	fC7	
		fC30	fC12	fC15	fC18	fC4	fC19		
			fC24	fC27	fC14	fC13			
				fC29	fC22				

[24] **Q-sort focalizing statement:** Instructions to the respondent. 'Please sort the following 30 capability statements according to how much you value them as a participant in this environmental assessment. Please rank the statements relatively to each other. Column 10 would contain your most essential capability: the capability that you value the highest as a stakeholder. The descending columns 9, 8, 7, 6, 5, 4, 3, 2, 1, require placements of capabilities you value less towards the right. The least valuable capability would be placed in furthest right column 1.'

As Figure 12 displays, the response frame is set up and in this case respondent 002 from the PARK case considered fC5 as the highest priority fC: 'To participate in political activities that affect your life'. The Factor Analysis uncovered correlations amongst the Q-sorts to establish the social perspectives for what groupings of the respondents in each case consider a hierarchy of priority functional capabilities. As indicated in Figure 12, those functional capabilities that are ranked in columns 7 (Valuable) to 10 (Highest Value) are included in the evaluation. Limited observation is made of the lower ranked capabilities due to the relative nature of the sorting process and the finite number of fC statements. The results are then compared with the normative hierarchy of Clark's list (2003) as well as Nussbaum's list (2003).

Items on Clark's list can be considered to be both functionings and capabilities. The overarching notion of a stakeholder's capability set: 'to participate effectively in choices that affect one's environment' empirically guides the application of items on Clark's list. The capability set is positioned within an investigative frame for considering the agency and utility an individual can realistically achieve through engaging in the participation process. Step-by-step instructions are provided to ensure that the respondents understand how items on the list are applied in the surveys. Likewise, the reader is encouraged to interpret the evaluation and analysis in light of a stakeholder's capability set: 'to participate effectively in choices that affect one's environment'.

3.6.3 METHOD 4: SURVEY USING EVALUATIVE LIKERT SCALES

CA research has focused descriptive data which has often been based on surveys has been used to contextualise and evidence the complexity of a certain situation (Comim, 2001). Anand and van Hees (2006, p. 147) found it "possible to make statistically significant distinctions between different capabilities". For each of the cases, descriptive statistics are used to quantify data coded from respondent characteristics and their responses to the 34 survey statements. Characteristics of respondents recorded by the survey include their residence, representation, age, gender, ethnicity, employment situation, language and income bracket. As described already, respondent selection of 'active' stakeholders was based on representativity in residence, ethnicity and gender.

Anand *et al*. (2007) provide methodological guidance to this section through their focus on the questions of whether and how capabilities can be measured. They also use a survey with Likert scales for all items on Nussbaum's list. They demonstrate ways in which capability data can be analysed assisting the validation procedures in the methodology adopted by this research. Many of the more significant dimensions of capability can be measured but it is worth acknowledging that these capability indicators may be particularly closely related to satisfactions with particular areas of life that are not fully considered in this evaluation.

The quantification exercise is split into six main steps. Firstly, a quantification of the respondent's demographic, income and disability characteristics. Secondly, responses to the 34 questions are recorded, coded and described. Thirdly, quantification involves an exploration of relationships between variables within each case study sample population. The fourth step involves an exploration of these same variables across the cases. In the fifth step, stakeholder characteristics of residence, representation, age, gender, ethnicity, employment situation, language and income bracket are each compared with variables of capabilities, functionings and other aspects of stakeholder experience. Finally, quantification also involves an attempt to uncover the relationships between the independent variables such as those between capabilities and functionings, or functionings and the participation experience.

The Microsoft Excel Statistics Package is used to provide the descriptive statistics, labelling the responses to each of the 34 survey questions. Observations are made regarding the stability of particular capabilities and functioning concepts across responses (McCluskey and Lalkhen, 2007). The Shapiro-Wilk test is applied to the response data using the null hypothesis to check if the sample comes from a normally distributed population. The Spearman's rank correlation coefficient (SRCC) is employed to explore correlations between responses within a case study and used to establish the linear association between the two variables (Zaiontz, 2015). This is verified with the Mann-Whitney Test for Two Independent Samples (MWT) when examining a set of differences in the pairs and with the Wilcoxon Signed Rank Test (WSRT) for a single sample when testing within a case validating the p-values of the SRCC (Zaiontz, 2015). Correlation coefficients are explored between selected pairs of variables. Observations enquire how closely the variables are associated and how closely they 'move' together (McCluskey and Lalkhen, 2007). Due to the independence of the case study populations, the sample for this analysis is considered in both the aggregate of all four EIA cases, as well as within each case study (Zaiontz, 2015).

Due to the small sample sizes of each case, correlations and regression analyses of quantitative methods are to be considered with caution. The research findings are experimental and exploratory. The existence of a strong linear relationship does not necessarily imply causation. Regression analysis is a simplification of reality. It does not provide an explanation of the relationship between the variables without an interrogation of contextual reference. As with the CA work of Garmendia and Stagl (2010), this limitation is characteristic of research involving participatory processes as they normally involve a small number of participants.

3.6.4 TRIANGULATION

The methodology used by this research is designed to explore aspects of stakeholder capabilities and functionings within the context of their participation experience of an environmental assessment. The overlap in concepts used in the four methods allows for a degree of inference with potential conclusions that have validity greater than each method can provide on its own. The research thereby employs triangulation for both methodological and data source types (Miles *et al.*, 2010). The concept of triangulation that is applied here comes from Olsen (2004) and Yeasmin and Rahman (2012) where multiple perspectives on an object under investigation are verified by multiple theories, methods and empirical materials. As with the work of Olsen (2004) and Yeasmin and Rahman (2012) this research uses triangulation to combine the advantages of both qualitative and quantitative methods as well as overcome the weaknesses or intrinsic biases of a single method. This is necessary regarding the sample sizes used Eisenhardt (1991). The greater aim of triangulation for this research however is not merely to validate findings, but to gain a deeper and wider understanding of the application of the capabilities approach to environmental assessment public participation, thereby grounding the theory (Olsen, 2004).

3.7 CONCLUSION: METHODOLOGY

The methodology described here operationalizes selected aspects of the capability approach for the evaluation of public participation in environmental assessment. Four sequences for operationalization structure the chapter according to:

1. Theoretical inclusion: Elaboration of theoretical concepts with potential empirical significance;
2. Measurement: Transformation of these theoretical concepts into empirical variables;
3. Application: Use of these variables in qualitative empirical analysis;
4. Quantification: Use of these variables in quantitative empirical analysis.

The theoretical concepts employed by the research were described with their empirical significance. The focus of the description centred on operationalizing stakeholder capabilities for participation in environmental assessment. The three empirical probes of ‘opportunity’, ability’, and ‘constraints’ that were identified in the previous chapter were elaborated and applied here.

The transformation of these theoretical concepts into empirical variables was then described in the ‘measurement’ section of this chapter. The discussion explained the field work methodology and the four methods employed by the research. The technical means and limits of the types of empirical investigation employed were explained.

The ‘application’ and ‘measurement’ sections of this chapter brought attention to and acknowledged the theoretical, operationalization and technical limitations to the methodology in this

multi-case research. Each of the four methods follows orthodox implementation regarding design, application, measurement and quantification without statistical innovation. The main innovation of each method is its application to the case studies through the inclusion of capabilities, functionings and participation concepts. The four empirical methods are primarily applied separately, to provide disaggregated empirical case and method clarity. Their triangulation potential and scope for identification of multi-level and cross-cutting trends are also discussed.

A combination of quantitative and qualitative analysis that is informed by the empirical results establishes grounds for the deeper discussion of the findings as well as the consilience task of this research. It is anticipated that the process of consilience is not unidirectional, nor is it without empirical challenges. Conceptually and methodologically it is possible that there may emerge findings that are useful for the development of environmental assessment theory and practice that the applied CA insights uncover. However, it is just as likely that the CA may benefit conceptually or methodologically from insights gained from the contextual application to the public participation context of environmental assessment.

4 CHAPTER FOUR: RESULTS ANALYSIS AND DISCUSSION

4.1 INTRODUCTION

In the field of environmental assessment, this research aims to advance the integration of human development and well-being considerations in participatory environmental decision making through the development of a capabilities approach to the practice. The participatory focus emphasises the potential for decision shaping by stakeholders and decision support for stakeholders to participate meaningfully in environmental assessment.

Eisenhardt and Graebner (2007) have identified that it is problematic to present a relatively complete narrative of each case in multi-case research. They therefore recommend that a narrative should be structured according to distinct theoretical propositions which are supported by empirical evidence. The results presentation and analysis are largely structured according to the 'capability indicator' types identified by Anand *et al.* (2007, p. 57) that outline an applied research agenda of the capability approach. The excerpt from Table 7 below provides a brief overview of how the methodology targets each type of indicator.

Capability indicators operationalized in this research (Excerpt from previous Table 7)

Capability Indicators (after Anand *et al.*, 2007, p. 57)		**Empirical** or **Normative** focus	**Method 1** Report Analysis	**Method 2** Q-method - Participation Experience	**Method 3** Ranking Q-method	**Method 4** Participation experience survey
Type 1	Externally orientated questions about '**Opportunity**'.	**Empirical**	Indirectly	Specifically	Specifically	Specifically
Type 2	Explicit questions about personal **'Ability'** aspects of capability.	**Empirical**	N/A	Specifically	N/A	Specifically
Type 3	Explicit '**Constraint**' questions.	**Empirical**	Specifically	Specifically	N/A	Specifically

Each of the four methods is designed to interrogate the stakeholders' participation experiences in particular and different ways. They are also designed to potentially triangulate aspects of the findings with the common themes of participant capabilities and functionings[25]. In the discussion to follow, findings from each method are drawn upon to identify aspects that relate to the empirical capability indicators of 'ability', 'opportunity' and 'constraint'. In this way, the analysis presents an integrated presentation and synthesised discussion of the three empirical types of capability indicators Anand *et al.* (2007) propose. Table 7 indicates that each of the indicator Types is targeted by operationalized and embedded concepts from two or more different empirical methods. The presentation of the findings intends to reflect the case characteristics as well as the method type employed. Where possible, the discussion has been scoped to focus on triangulated aspects that are corroborated by more than one case or more than one method. This adds to the validity of the findings

[25] For an explanation of the operationalization of the capability indicator Types in this table please refer to Methods Chapter 3.3

and analysis. It also provides a reflective benefit for the synthesis providing multiple methodological perspectives on each indicator Type.

This chapter contains eight analytical sections. Following this introduction, Section 4.2 explains the coding, concepts and referencing style used throughout the discussion. Section 4.3 focuses on general observations of the participation experiences of the stakeholders in the case studies. Results from Method 2 are presented and discussed using generic evaluative criteria for environmental assessment established by Jay *et al.* (2007) and Cashmore (2004). Section 4.4 focuses on the stakeholder's capabilities as they can be observed to relate to participation opportunity indicators. This section presents and discusses the relevant findings of Method 2 and Method 4. Section 4.5 focuses on the abilities of the stakeholder for participation. This section presents and discusses the relevant findings from Method 2 and Method 4. Section 4.6 focuses on the stakeholder's capability constraints regarding barriers to meaningful participation. This section presents and discusses the relevant findings from Method 1, Method 2 and Method 4. Section 4.7 focuses on the relationships between individual capabilities and functionings. A synthesis of the relationships of selected capability and functionings results from Method 4 provides a framework for that discussion. Section 4.8 focuses on the stakeholders' ranking of highly valued capabilities. This section presents and discusses the relevant findings from Method 1 and Method 2 and identifies EA practice lessons through contrasting the findings with the CA literature.

Throughout the discussion of these empirical findings, the analysis provides a varied focus on contextual characteristics of the case studies, as well as attempts to draw out themes that indicate more general observations of capabilities and functionings. The theory testing approach to this discussion does not allow for the type of in-depth case study discussion that might fit the type of 'thick description' that conventional case study analysis requires. The reader is encouraged to appreciate the overall research aim throughout the discussion. This requires an appreciation of the workability of capability concepts for the application of a capabilities approach to public participation in environmental assessment. For such analysis to be salient in the discussion the results presented here, together with their subsequent analysis, necessitates a continual reflection on not just the empirical findings but also the methodology used and the workability of the applied concepts. The discussion, therefore, intends to not focus on the idiosyncratic details of one particular case and rather be guided by the capability indicator Types shown in the excerpt from Table 7 above.

4.2 CODING, CONCEPTS AND REFERENCES FOR THE ANALYSIS AND DISCUSSION

Results that are derived from the four methods have undergone a number of transformations to reach the presentation format of this chapter. For the reader's sake, the lengthy 'raw data' that these results are based on has been placed in Appendices 7.1 to 7.7. Where possible the results are presented to adequately reference the relevant appendices for transparency and verification purposes. For the reader's ease however the discussion makes use of various footnotes and coding systems in order to reduce excessive referral to the appendices. Coding is explained throughout the chapter where necessary.

In general, when the discussion refers to one of Nussbaum's capabilities it is in bold type and italicised as follows, '***Practical Reason***'. Likert statement number one is abbreviated to [Ls1]. This is done in order to create a distinction in the reader's mind between the research statements formulated for the survey, and that of the original Nussbaumian formulation of that capability. In some instances, the aggregate response for all the EIA cases is referred to and coded as 'All'. The REDZ responses are not included in the EIA participation experience analysis. In some cases, an individual EIA case is compared against the other three EIA cases; not against the aggregate average of all the EIA cases. In that instance, the other three EIA cases are referred to as 'O3Cs' [Other three EIA Cases]. Q-statements are coded for the discussion as follows: Q-statement number two is abbreviated as 'Qs2'. Functional capabilities are coded as 'fCs'. Before discussing the capabilities findings, an overview of the general case participation experiences is provided to set the participation context of the cases as they were expressed in the social perspectives (Method 2).

Empirical research that applies the capabilities approach faces a number of significant challenges. Anand *et al.* (2007) observe that reliance on self-reported evaluations and survey techniques are an imperfect measure of capabilities and functionings. Despite contingent limitations regarding subjectivity and adaptability however they have proven to be the most practicable starting point (Anand *et al.*, 2005; Anand and van Hees, 2006; Anand, 2007; Anand *et al.*, 2007). The findings of the Survey using evaluative Likert scales establish the general stability, applicability and appropriate fit of selected capabilities tested for in the case responses. For each response distribution, a statistical description the variance and stability is provided for the Likert statement responses displayed. Statistical terms used in the discussion of the Survey using evaluative Likert scales results include the following:

- 'O3Cs': This is an abbreviation for the other three cases when a comparison is made of one EIA case with the aggregate data of the other three EIA cases in order to display a case specific outlier.
- 'WSRT': This is an abbreviation for the Wilcoxon Signed Rank Test. The Wilcoxon signed-rank test is the nonparametric test equivalent to the dependent t-test. As the Wilcoxon signed-rank test does not assume normality in the data, it can be used when this assumption has been violated and the use of the

dependent t-test is inappropriate. It is used to compare two sets of scores that come from the same participants (Zaiontz, 2015).

- 'SRCC': This is an abbreviation for Spearman's rank correlation coefficient, also known as Spearman's rho. It is the nonparametric version of the Pearson product-moment correlation. It measures the strength of association between two ranked variables (Zaiontz, 2015).
- 'MWT': This is an abbreviation for the Mann-Whitney Test for Two Independent Samples (Zaiontz, 2015). This is used to compare differences between two independent groups when the dependent variable is either ordinal or continuous, but not normally distributed (Zaiontz, 2015). It is selected as appropriate for this research based on the indication in the descriptive statistics analysis, using the Shapiro-Wilk Test (Appendix 7.6.3), that identified the populations to be not normally distributed.
- 'p-value': The p-value generally indicates if the relationship is statistically significant (Zaiontz, 2015).
- 'Sig': This and abbreviation for 'significant' and indicates if the p-value is statistically significant (Zaiontz, 2015).
- 'effect r': This describes the relationship in terms of magnitude (Zaiontz, 2015).
- 'Alpha 0.05': Statistical significance is attained when a p-value is less than the significance level which is in turn denoted by the 'Alpha' (Zaiontz, 2015).
- The 'count' is the total number of responses for the population of that case. For each case, this number is different as they are drawn from differently sized stakeholder populations. The 'count' number indicated is a representative selection of the 'active' registered interested and affected parties (See Section 3.5.2 and Appendix 7.1.2 for further explanation of these ratios).
- 'Variance' is a numerical value used to indicate how widely individuals in a group vary. If individual observations vary greatly from the group mean, the variance is large (Zaiontz, 2015).

4.3 METHOD 2 RESULTS: SOCIAL PERSPECTIVES OF THE PUBLIC PARTICIPATION EXPERIENCE

The results from Method 2 (Q-method) present the social perspectives of the public participation experiences in each case. This was derived from a Factor Analysis of individual responses to 30 participation statements within a Q-methodology frame. The method aimed to identify correlated statements that reflect the variance in stakeholder opinion regarding their participation experience. Q-statements are coded for the discussion as follows: Q-statement number two is abbreviated as 'Qs2'. In the discussion to follow these social perspectives are also coded. For example, the second social perspective of the second case study is abbreviated to: 'GAS:F2' which represents [Case Study 2 GAS: Factor 2].

The Factor Analysis established correlations and relationships between Q-sorts and identified the idealised sorts that represent a group of like-minded stakeholders. Statistically significant[26] correlations were then interpreted from the factor analysis to stand for a coherent social perspective. Each social perspective is presented here with a 'core belief' and one or more 'secondary beliefs' that make up a coherent position for that factor based on the positioning of the constituent statements. Table 18 denotes that a variety of social perspectives were generated for each case.

[26] Significant at p-value of <0.05.

Table 18: Summary of Q-method social perspectives per case study

Case Study		**Factor Analysis**
Table 19 Case Study 1: 'PARK'	Basic Assessment	2 Social Perspectives
Table 20 Case Study 2: 'GAS'	Scoping Exercise	6 Social Perspectives
Table 21 Case Study 3: 'WIND'	Scoping & EIA	4 Social Perspectives
Table 22 Case Study 4: 'MINE'	Scoping & EIA (MPRDA)	5 Social Perspectives
Table 23 Case Study 5: 'REDZ'	SEA	5 Social Perspectives

The Q-method social perspectives reflect the diversity of opinion on a topic and therefore, in a more socially differentiated stakeholder group, there is potential for the generation of more factors. The PARK case yielded two social perspectives. In comparison, the other cases yielded between four and six social perspectives. Appendix 7.2 presents the Factor Analyses and Appendix 7.3 the Factor Interpretations for each case. The tables to follow present the social perspectives as they are interpreted from the Factor Analysis. The analysis and discussion of these social perspectives are not included immediately with the tables but are integrated into the discussion of the chapter. Although the social perspectives below can yield multiple interpretations and lengthy discussion, many of which go beyond the scope and aim of this research, that analysis and discussion is limited to how the Factors indicate or elaborate aspects of stakeholder participation capabilities and functionings.

Table 19: Case Study 1: PARK – Basic Assessment

Factor Description [Social Perspectives]	Points of Agreement	Points of Disagreement
Core Belief[27] - Factor 1: [PARK:F1] • The decisions made reflect a fair and collaborative process which included local perspectives resulting in sustainable and acceptable outcomes. **Secondary Belief**[28] • Financial assistance would have helped facilitate a broader input from affected parties who could not participate. • Stakeholders that were 'politically connected' controlled the process more than others.	Qs1: I did not feel comfortable and safe as a participant.[29] [F1, -3]; [F2, -2] Qs14: The process does not improve participants' understandings of others' beliefs, values, and perspectives. [F1, -4]; [F2, -2] Qs24: Stakeholders that were 'politically connected' controlled the discussions more than others. [F1, 3]; [F2, 3] Qs25: Public participation added quality to the sustainability of decisions being made. [F1, 4]; [F2, 3] Qs28: The EA public participation process was fair. [F1, 3]; [F2, 4] Qs29: The EA public participation process was not run competently. [F1, -4]; [F2, -4] Qs30: Relevant information from certain groups was ignored. [F1, -2]; [F2, -4]	Statistically significant statements of greatest disagreement[30]: Qs2: Other stakeholders built my confidence and self-esteem. Qs19: It was easy for me to gain influence in technical discussions. Qs27: I was challenged to change a few things in my lifestyle to contribute towards sustainability.
Core Belief - Factor 2: [PARK:F2] • Decisions made reflect a competent, fair and collaborative process which included local perspectives which integrated economic, social and ecological considerations which added quality to the outcomes. **Secondary Belief** • As I learnt new things about the environment through the process I was challenged to change a few things in my lifestyle. • It was not easy for some stakeholders to gain influence in the technical discussions and stakeholders that were 'politically connected' controlled the process more than others.		

Table Key: Q-method Social Perspectives

The formatting and coding used for the Factors of the PARK case study in Table 19 are standardised throughout the presentation of the five cases.

[27] **Core Belief:** A coherent description of a number of highly correlated statements that have been placed in a similar and strongly held position.

[28] **Secondary Belief:** A coherent description of a number of highly correlated statements that have been placed in a similar and strongly held position. However, these placements are not as strongly held as those of the 'Core Belief'.

[29] **Points of Agreement:** In this case both Factor 1 and Factor 2 placed [Qs1] in similar positions. F1 placed [Qs1] at minus three and F2 placed [Qs1] at minus 2 on the sorting frame. This makes that statement a point of agreement which is relatively strongly held. Both factors concur that they disagree with the statement.

[30] **Points of Disagreement:** The Factor analysis identifies statements that are statistically significant (at 0.05 p-value) points of disagreement. The two Factors of the Wetlands Park strongly disagree over statements [Qs2], [Qs19] and [Qs27]. The Factor interpretation included [Qs27] descriptively in the 'Secondary Belief' of [PARK:F2] distinguishing this aspect from the experience of those stakeholders represented by [PARK:F1].

Table 20: Case Study 2: GAS – Scoping Exercise

Factor Description [Social Perspectives]	Points of Agreement	Points of Disagreement
Core Belief - Factor 1: [GAS:F1] • The public participation process was not run competently. It was difficult for many stakeholders to influence the decision making process and expert knowledge was valued more highly than local knowledge. Despite these procedural problems, the process added quality to the outcome as the developer cancelled the project. **Secondary Belief** • Stakeholders learnt new things about the challenges faced by the environment and were challenged to make appropriate lifestyle changes.	Qs20: It was hard to gain influence in discussions but I still contested to gain more impact. [F1, -1]; [F2, -4], [F3, -2]; [F4, -3]; [F5, -1]; [F6, -1]	Statistically significant statements of greatest disagreement: Qs3: I had an equal chance to voice my concerns.
Core Belief - Factor 2: [GAS:F2] • Stakeholders with higher education controlled the discussion and relevant information from certain groups were ignored. Expert knowledge was valued more highly than local knowledge. **Secondary Belief** • Some excluded affected parties could have participated in the process if financial resources were provided for them to do so.		
Core Belief - Factor 3: [GAS:F3] • The EIA public participation process integrated social, ecological and economic considerations in the decision making but was not run competently and relevant information from certain groups was ignored. **Secondary Belief** • Negotiations (trade-offs) with other stakeholders were not possible and it was not easy for me to gain influence in technical discussions. • Despite these challenges, I felt comfortable and safe as a participant, other stakeholders built my confidence and self-esteem and my values and opinions were discussed.		
Core Belief - Factor 4: [GAS:F4] • I did not feel comfortable and safe as a participant, stakeholder's interactions did not promote a sense of accountability and I found it difficult to build trust among the different participants. **Secondary Belief** • The discussions did not allow for inclusive participation and were controlled by stakeholders with higher education. • The process excluded those less able to articulate their opinion and expert knowledge was valued more highly than local knowledge. • I had a limited chance to voice my concerns and my values and opinions were not discussed. The process does not improve participants' understandings of others' beliefs, values, and perspectives.		
Core Belief - Factor 5: [GAS:F5] • I felt comfortable and safe as other stakeholders' interactions promoted a sense of trust, accountability and sincerity, and were courteous and respectful of my perspectives. **Secondary Belief** • Financial resources were not provided to enable those who needed it to participate.		
Core Belief - Factor 6: [GAS:F6] • The process does not improve participants' understandings (learning) of others' beliefs, values, and perspectives as discussion format did not allow for inclusive participation, as relevant information from certain groups was ignored. **Secondary Belief** • The EIA public participation process was not run competently nor considered fair. • I found it difficult to build trust among the different participants during the process and stakeholder's interactions did not promote a sense of accountability and sincerity.		

Table 21: Case Study 3: WIND – S&EIA

Factor Description [Social Perspectives]	Points of Agreement	Points of Disagreement
Core Belief - Factor 1: [WIND:F1] • It was not easy for me to gain influence in technical discussions or negotiate (trade-offs) with other stakeholders. My values and opinions were not discussed, I did not have an equal chance to voice my concerns and relevant information from certain groups was ignored. **Secondary Belief** • Financial resources were not provided to enable those who needed it to participate effectively which led to the exclusion of the involvement from some less articulate affected parties.	Qs6: I did not have equal access to information. [F1, 0]; [F2, 2], [F3, -1]; [F4, 1] Qs10: Negotiations (trade-offs) with other stakeholders were not possible for me. [F1, 4]; [F2, 3], [F3, 4]; [F4, 3] Qs13: Expert knowledge was not valued more highly than local knowledge. [F1, -2]; [F2, -2], [F3, -2]; [F4, -3]	Statistically significant statements of greatest disagreement: Qs14: The process does not improve participants' understandings of others' beliefs, values, and perspectives. Qs19: It was easy for me to gain influence in technical discussions. Qs29: The EA public participation process was not run competently. Qs30: Relevant information from certain groups was ignored.
Core Belief - Factor 2: [WIND:F2] • The process does not improve participants' understandings of others' beliefs, values, and perspectives. Relevant information from certain groups was ignored and stakeholder's interactions did not promote a sense of trust, accountability and sincerity. **Secondary Belief** • Although I had an equal chance to voice my concerns, negotiations (trade-offs) with other stakeholders were not possible for me.		
Core Belief - Factor 3: [WIND:F3] • It was not easy for me to gain influence in technical discussions nor discuss trade-offs with other stakeholders. My values and opinions were not discussed. **Secondary Belief** • The EIA public participation process was not run competently, it excluded those less able to articulate their opinion and relevant information from certain groups was ignored. • The process does not improve participants' understandings of others belief's values and perspectives.		
Core Belief - Factor 4: [WIND:F4] • The discussions were controlled by experts and stakeholders with higher education however it added quality to the sustainability outcomes of the decisions made. They integrated social, ecological and economic perspectives. **Secondary Belief** • The EIA public participation process was run competently and improves participants' understandings of others' beliefs, values, and perspectives. • I learnt new things about environmental problems society is facing and felt comfortable and safe as a participant but negotiations (trade-offs) with other stakeholders were not possible for me and my values and opinions were not discussed.		

Table 22: Case Study 4: MINE – Scoping and EIA

Factor Description [Social Perspectives]	Points of Agreement	Points of Disagreement
Core Belief - Factor 1: [MINE:F1] • I did not have equal access to information, it was hard to negotiate trade-offs or gain influence in discussions but I still contested to gain more impact. **Secondary Belief** • The process did not allow for inclusive participation, relevant information from certain groups was ignored and expert knowledge was valued more highly than local knowledge resulting in the participation process not adding value to the decision making concerning sustainable outcomes. • The MINE process was not fair and financial support was not provided for those who needed it.	Qs16: I found it easy to build trust among the different participants during the process. [F1, -1]; [F2, -2]; [F3, -1]; [F4, -2]; [F5, -2] Qs17: Learning as a group of stakeholders is only possible when power is willingly shared. [F1, 0]; [F2, 0]; [F3, 0]; [F4, -1]; [F5, -1] Qs24: Stakeholders that were 'politically connected' controlled the discussions more than others. [F1, 2]; [F2, 3]; [F3, 4]; [F4, 2]; [F5, 2] Qs29: The EA public participation process was not run competently. [F1, 2]; [F2, 4]; [F3, 3]; [F4, 4]; [F5, 4]	Statistically significant statements of greatest disagreement: Qs26: I did not learn new things about environmental problems that society faces. Qs21: Discussions integrated social, ecological and economic perspectives.
Core Belief - Factor 2: [MINE:F2] • The MINE public participation process was not run competently or fairly and did not add quality to the sustainability of decisions being made. **Secondary Belief** • Stakeholders from wealthier positions and those that were 'politically connected' controlled the discussions more than others. • I was challenged to change a few things in my lifestyle as I learnt new things about environmental problems society faces.		
Core Belief - Factor 3: [MINE:F3] • Some important stakeholders did not take part in the process and some affected parties could not participate for reasons that could have been overcome. **Secondary Belief** • The discussion format did not provide for inclusive participation. Stakeholders that were 'politically connected' controlled the discussions and relevant information from certain groups was ignored including perspectives from those less able to articulate their opinion. • The process does not improve participants' understandings of others' beliefs, values, and perspectives and stakeholders' interactions did not promote a sense of accountability and sincerity. • The MINE public participation process was not run competently.		
Core Belief - Factor 4: [MINE:F4] • The MINE public participation process was not run fairly or competently and did not add quality to the sustainability of decisions made. **Secondary Belief** • I did not learn new things about environmental problems society is facing and did not have equal access to information. • Negotiations (trade-offs) with other stakeholders were not possible for me and they were not courteous and respectful of my perspective.		
Core Belief - Factor 5: [MINE:F5] • The MINE public participation process was neither run competently nor fairly. • Discussions valued expert knowledge above local knowledge, did not integrate social, ecological and economic perspectives and the public participation did not add quality to the sustainability of decisions being made. **Secondary Belief** • The process excluded those less able to articulate their opinion, relevant information from certain groups was ignored and financial resources were not provided to enable those who needed it to participate effectively. • Negotiations (trade-offs) with other stakeholders were not possible for me and my values and opinions were not discussed.		

Table 23: Case Study 5: REDZ – SEA

Factor Description [Social Perspectives]	Points of Agreement	Points of Disagreement
Core Belief - Factor 1: [REDZ:F1] • Financial resources were not provided to enable wider participation which excluded some affected parties including those less able to articulate their opinion. **Secondary Belief** • Negotiations (trade-offs) with other stakeholders were not possible for me, my values and opinions were not discussed and stakeholder's interactions did not promote a sense of accountability or sincerity. • The discussion format did not allow for inclusive participation with expert knowledge valued more highly than local knowledge limiting the contribution of stakeholders to the decision making.	Qs4: All important stakeholders took part in the process. [F1, -2]; [F2, -1]; [F3, -3]; [F4, -1]; [F5, -3] Qs9: Financial resources were not provided to enable those who needed it to participate effectively. [F1, 4]; [F2, 3]; [F3, 4]; [F4, 3]; [F5, 3] Qs13: Expert knowledge was not valued more highly than local knowledge. [F1, -3]; [F2, -3]; [F3, -4]; [F4, -4]; [F5, -4] Qs17: Learning as a group of stakeholders is only possible when power is willingly shared. [F1, 2]; [F2, 0]; [F3, 0]; [F4, 1]; [F5, 0] Qs18: The discussions used language which I did not fully understand. [F1, -1]; [F2, 1]; [F3, -1]; [F4, -1]; [F5, -1] Qs21: Discussions integrated social, ecological and economic perspectives. [F1, 2]; [F2, 2]; [F3, 2]; [F4, 4]; [F5, 2]	Statistically significant statements of greatest disagreement: Qs24: Stakeholders that were 'politically connected' controlled the discussions more than others.
Core Belief - Factor 2: [REDZ:F2] • Stakeholders with higher education controlled the process but those that were 'politically connected' did not. • Relevant information from certain groups was ignored and financial resources were not provided to enable those who needed it to participate effectively. **Secondary Belief** • The process does improve participants' understandings of others' beliefs, values, and perspectives; I was challenged to change a few things in my lifestyle and learnt new things about environmental challenges society faces.		
Core Belief - Factor 3: [REDZ:F3] • Expert knowledge was valued more than local knowledge, stakeholders with higher education and stakeholders that were 'politically connected' controlled the discussions more than others. **Secondary Belief** • The process did not fairly provide financial resources to enable those who needed it to participate effectively and excluded those less able to articulate their opinion. • Participants were courteous and respectful of my perspectives however it was hard to gain influence in discussions and my values and opinions were not discussed.		
Core Belief - Factor 4: [REDZ:F4] • The SEA public participation process was not run competently. • Financial resources were not provided to enable inclusive participation and those who needed it to participate effectively were excluded. Stakeholders from wealthier positions controlled the discussions more than others, expert knowledge was valued more highly than local knowledge, and relevant information from certain groups was ignored. **Secondary Belief** • Although discussions integrated social, ecological and economic perspectives the public participation process did not add quality to the sustainability of decisions being made. I did not find it easy to build trust among the different participants during the process although my values and opinions were discussed.		
Core Belief - Factor 5: [REDZ:F5] • The process does not improve participants' understandings of others' beliefs, values, and perspectives as discussions did not allow for inclusive participation and relevant information from certain groups was ignored. **Secondary Belief** • Although participants were courteous and respectful of my perspectives, negotiations (trade-offs) with other stakeholders were not possible for me and it was not easy for me to gain influence in technical discussions • The SEA public participation process was run competently and based most decisions on expert input, although some important stakeholders did not take part in the process.		

4.3.1 GENERAL OBSERVATIONS OF THE CASES IN THE SOCIAL PERSPECTIVES

As an introduction to the cases, this overview uses EA evaluation criteria that consider the participation experiences as they relate to the direct and indirect procedural aims of EA (Jay *et al.*, 2007), and the substantive outcomes of the process (Cashmore, 2004).

The social perspectives generated in the Q-method (Method 2) reflect differing ranges of respondent opinion on the public participation processes. In some cases, there are specific instances where the social perspectives indicate a high satisfaction with the EA participation methods used in the processes. They also demonstrate a degree of adequacy and satisfaction regarding their role in that process in light of the procedural and substantive outcomes achieved. Three examples of this are displayed in the two Factors of the PARK case and one Factor of the WIND case:

> PARK:F1 [The decisions made reflect a fair and collaborative process which included local perspectives resulting in more sustainable and acceptable outcomes][30].
>
> PARK:F2 [Decisions made reflect a competent, fair and collaborative process which included local perspectives which integrated economic, social and ecological considerations which added quality to the outcomes].
>
> WIND:F4 [The EIA public participation process was run competently and improves participants' understandings of others' beliefs, values, and perspectives].

The social perspectives of the PARK case present high satisfaction with the basic assessment. The factors indicate satisfaction with aspects of procedural competence, fairness, atmosphere of participation, collaboration, lifestyle change, social learning, understanding others beliefs, values and perspectives, integration of social, economic and ecological aspects, and for the outcomes of the BA. The analysis to follow illustrates how these PARK Factors indicate characteristics of 'fertile functioning' in a high performing and outlier case. In the social perspectives of other cases however there are a range of opinions that reflect divergent levels of dissatisfaction with the EA public participation processes.

The trends listed in Table 19 below focus on general tendencies in the social perspectives that cut across the cases. The factors represented in Table 19 are statistically correlated stakeholder Q-sorts that represent subjective, but coherent viewpoints that respondents 'felt strongly about'. They are drawn from the social perspectives of Tables 14-18 in the section above. The list of trends is not an exhaustive critique of a participation process and only focuses on the aspects that were 'uncovered' (Webler *et al.*, 2009) in the social perspectives. Table 19 below displays the general trends in participation based on the core and secondary beliefs of the social perspectives. By total number of Factors, the table clearly shows that the listed items that stakeholders feel most strongly about are issues they find dissatisfying or unacceptable. This is not surprising and would be expected of a survey of stakeholder opinions regarding a local development. Very often those who get involved in the process have particularly negatively framed concerns. The Q-statements were framed to focus on the competent execution of a meaningful

[30] Social perspective (Factor) number one from the Wetlands Park case study.

the process have particularly negatively framed concerns. The Q-statements were framed to focus on the competent execution of a meaningful public participation process. It is assumed that this can be done even in the case of an undesirable type of development.

Table 24: Trends in Social Perspectives generated by the Q-method

Structuring Evaluative Criteria	Variance in stakeholder satisfaction with participation adequacy reflected in the Factors					
	Very Satisfied Sufficient Core Belief	**Satisfactory Sufficient** Secondary Belief	Total	**Unsatisfactory Insufficient** Secondary Belief	**Very Dissatisfied Insufficient** Core Belief	Total
'Direct procedural aim of EIA' (Jay *et al.*, 2007)						
'Indirect aims of EIA' (Jay *et al.*, 2007)						
'Contribute to sustainable development' (Cashmore *et al.*, 2004)						
Total	**20 Factors**	**6 Factors**	**26**	**31 Factors**	**27 Factors**	**58**
Totals by cases						
Case Study 1: PARK	10	0	**10**	2	0	**2**
Case Study 2: GAS	3	2	**5**	6	6	**12**
Case Study 3: WIND	6	0	**6**	2	3	**5**
Case Study 4: MINE	0	0	**0**	12	11	**23**
Case Study 5: REDZ	1	4	**5**	9	7	**16**

Based on the evaluative criteria selected, 26 factors express levels of satisfaction with the process and 58 factors express degrees of dissatisfaction. Issues considered admissible for evaluative attention are those counted to relate to the objectivity requirements of sufficiency for participation in EA rather than the subjectivity of individual preference.

Using the overview and criteria presented in Table 24 above, at face value, Case Study 1 has the highest number of factors indicating stakeholder satisfaction, as well as the least number of factors presenting dissatisfaction with the PARK Basic Assessment. Case Study 4 stands apart from the others with a significantly higher number of 23 factors indicating stakeholder dissatisfaction with the MINE process. Case studies 2, 4 and 5 also have relatively high numbers of factors indicating stakeholder dissatisfaction in various categories. The discussion of the social perspectives to follow here uses in-text and footnote references to assist the reader with the social perspective under discussion. At times, the whole Factor may be described in this discussion: usually, however, only the relevant aspect of that Factor is presented. For example [PARK:F2][32] is presented for the discussion of participation procedure as a footnote with the description of Factor 2 from the Park case study. This is the relevant part of the 'Core Belief' of that Factor for the discussion on participation procedure. In order to aid in the discussion, unless relevant, the rest of that social perspective is not described. Once a Factor has been presented as a footnote on a page it will not be presented again on that page.

Jay *et al.* (2007) identify that evaluative criteria for environmental assessment need to be based on the direct procedural aims of environmental assessment as well as the indirect aims. Considering the direct aims of the assessment the social perspectives present stakeholder opinion

[32] [PARK:F2] 'Decisions made reflect a competent, fair and collaborative process which included local perspectives which integrated economic, social and ecological considerations which added quality to the outcomes'.

regarding sufficiency for a) procedural competence, b) procedural fairness, c) the degree to which the process was controlled by perceived 'experts', d) the atmosphere of participation and e) collaboration aspects, in Table 25 below.

Table 25: Direct procedural aims of the EA processes in the Factors (after Jay *et al.*, 2007)

Structuring Evaluative Criteria	Variance in stakeholder satisfaction with participation adequacy reflected in the Factors					
	Very Satisfied Sufficient Core Belief	**Satisfactory Sufficient** Secondary Belief	Total	**Unsatisfactory Insufficient** Secondary Belief	**Very Dissatisfied Insufficient** Core Belief	Total
'Direct procedural aim of EIA' (Jay *et al.*, 2007)						
a) Procedural competence	[PARK:F1]; [PARK:F2]; [WIND:F4]	None	**3**	[GAS:F6]; [WIND:F3]; [MINE:F3]; [REDZ:F5]	[GAS:F1]; [MINE:F2]; [MINE:F4]; [MINE:F5] [[REDZ:F4]	**9**
b) Procedural fairness	[PARK:F1]; [PARK:F2]	None	**2**	[GAS:F4] [MINE:F1]	[MINE:F2]; [MINE:F4]; [MINE:F5]	**5**
c) Expert-driven exercise	None	None	--	[GAS:F4]; [MINE:F1] [REDZ:F1]; [REDZ:F4]; [REDZ:F5]	[GAS:F1]; [GAS:F2]; [MINE:F5]; [REDZ:F2]	**9**
d) Atmosphere of participation	[PARK:F1]; [GAS:F5]; [WIND:F4]	[GAS:F3]; [REDZ:F2]; [REDZ:F5]	**6**	[GAS:F6]; [MINE:F1]; [MINE:F3]; [MINE:F4] [REDZ:F1]; [REDZ:F4]	[GAS:F4] [WIND:F2]	**8**
e) Collaboration	[PARK:F1]; [PARK:F2]	None	**2**	None	None	--

Table 25 presents three core beliefs, [PARK:F1; PARK:F2][33] and [WIND:F4][34], that express satisfaction that the cases exhibited procedural competence. In contrast to the unanimous agreement of the factors for PARK, an overall assessment of competence for the WIND case is challenged by the dissatisfaction found in [WIND:F3][35]. All cases, other than the PARK, have at least one social perspective that reflects stakeholder dissatisfaction with the procedural competence of the process. The MINE case stands out with one dissatisfied [MINE:F3], and three 'very dissatisfied' [MINE:F2; MINE:F4; MINE:F5][36] social perspectives in this regard.

The social perspectives closely relate procedural fairness with procedural competence. The two PARK factors which display procedural fairness [PARK:F1; PARK:F2][37] are articulated together with procedural competence. Likewise, three of the four MINE factors which articulate dissatisfaction with procedural fairness [MINE:F1; MINE:F2; MINE:F4; MINE:F5] closely relate each perspective with procedural

[33] [PARK:F1] 'The decisions made reflect a fair and collaborative process which included local perspectives resulting in sustainable and acceptable outcomes'. [PARK:F2] 'Decisions made reflect a competent, fair and collaborative process which included local perspectives which integrated economic, social and ecological considerations which added quality to the outcomes'.

[34] [WIND:F4] 'The EIA public participation process was run competently and improves participants' understandings of others' beliefs, values, and perspectives'.

[35] [WIND:F3] 'The EIA public participation process was not run competently, it excluded those less able to articulate their opinion and relevant information from certain groups was ignored'.

[36] [MINE:F2] 'The MINE public participation process was not run competently or fairly and did not add quality to the sustainability of decisions being made'.

[37] [PARK:F1] 'The decisions made reflect a fair and collaborative process which included local perspectives resulting in sustainable and acceptable outcomes'. [PARK:F2] 'Decisions made reflect a competent, fair and collaborative process which included local perspectives which integrated economic, social and ecological considerations which added quality to the outcomes'.

incompetence [MINE:F3; MINE:F2; MINE:F4; MINE:F5][38]. Qs29 [The EA public participation process was not run competently] was one of the statements that were significantly agreed upon by all five MINE Factors.

The three cases with social perspectives that express discontent with the 'expert-driven exercise' of EA all have more than one social perspective that indicate this evaluation [GAS:F1; GAS:F2; GAS:F4; MINE:F1; MINE:F5; REDZ:F1; REDZ:F4; REDZ:F5; REDZ:F2][39]. More than in the EIA cases, the REDZ has a different expectation of, and the greater role for, experts in the SEA process. The responding stakeholders however do not temper their expectation or opinions with this difference according to the type of EA. All four factors of the REDZs SEA [REDZ:F1; REDZ:F2; REDZ:F4; REDZ:F5][40] present dissatisfaction in the social perspectives regarding how expert-driven the SEA process was. This is epitomised by REDZ:F1 [The discussion format did not allow for inclusive participation with expert knowledge valued more highly than local knowledge limiting the contribution of stakeholders to the decision making].

Considering the indirect aims of the assessment proposed by Jay et al. (2007), the social perspectives presented in Table 26 below present respondent opinions regarding a) social learning that involved environmental education, and b) improvements in understanding of others beliefs, values and perspectives.

Table 26: Indirect aims of the processes in the Factors (after Jay *et al.*, 2007)

Structuring Evaluative Criteria	Variance in stakeholder satisfaction with participation adequacy reflected in the Factors					
	Very Satisfied Sufficient Core Belief	**Satisfactory Sufficient** Secondary Belief	Total	**Unsatisfactory Insufficient** Secondary Belief	**Very Dissatisfied Insufficient** Core Belief	Total
'Indirect aims of EIA' (Jay *et al.*, 2007)						
a) Social learning - Environmental education	[PARK:F2] [WIND:F4]	[GAS:F1] [REDZ:F2]	**4**	[MINE:F4]	None	**1**
b) Improve understanding others belief's values and perspectives	[WIND:F4] [REDZ:F4]	None	**2**	[GAS:F4]; [WIND:F3]; [MINE:F3]; [REDZ:F2]	[GAS:F6]; [WIND:F2]; [REDZ:F5]	**7**

Table 26 above indicates that the MINE case is the only case study that presents a dissatisfied social perspective [MINE:F4][41] regarding the social learning aspects of the process. One factor in each of the other four cases [PARK:F2; WIND:F4; GAS:F1; REDZ:F2][42] represents some degree of satisfaction with

[38] For example [MINE:F2] 'The MINE public participation process was not run competently or fairly and did not add quality to the sustainability of decisions being made'.

[39] For example [GAS:F1] 'It was difficult for many stakeholders to influence the decision making process and expert knowledge was valued more highly than local knowledge'. For example [MINE:F1] 'The process did not allow for inclusive participation, relevant information from certain groups was ignored and expert knowledge was valued more highly than local knowledge resulting in the participation process not adding value to the decision making concerning sustainable outcomes'. For example [REDZ:F1] 'The discussion format did not allow for inclusive participation with expert knowledge valued more highly than local knowledge limiting the contribution of stakeholders to the decision making'.

[40] For example [REDZ:F5] 'The SEA public participation process was run competently and based most decisions on expert input, yet some important stakeholders did not take part in the process'.

[41] [MINE:F4] 'I did not learn new things about environmental problems society is facing and did not have equal access to information'.

[42] For example [GAS:F1] 'Stakeholders learnt new things about the challenges faced by the environment and were challenged to make appropriate lifestyle changes'. For example [REDZ:F2] 'The process does improve participants' understandings of others' beliefs, values, and perspectives […]'.

social learning outcomes. The WIND and REDZ cases have one factor each [WIND:F4; REDZ:F2][43] that suggest the EA procedures of those two cases improved stakeholder's understanding of others belief's, values and perspectives. The large number of factors which indicate a significant dissatisfaction with this criterion however suggests that for the GAS [GAS:F4; GAS:F6][44], WIND [WIND:F2; WIND:F3], MINE [MINE:F3] and the REDZ [REDZ:F2; REDZ:F5] cases, there was at least one group of stakeholders in each that disagree that their experience of the public participation improved stakeholder's […understanding of others belief's, values and perspectives]. The corroboration of perspectives here suggests that, in the opinion of these stakeholder groups, the process did not live up to these indirect aims in each of the four respective EAs.

Cashmore *et al.* (2004) suggest that an evaluation of environmental assessment needs to consider, *inter alia*, how the process followed an overt rational decision making process; or if it was influenced or subordinated to political agendas. Although Cashmore presents an oversimplified dichotomy between the 'political' and the 'rational' in EA, this overview uses the dualism he proposes as an exploration of the social perspectives as the dichotomy is, to a certain extent, reflected in the Factors. Going beyond the dichotomy of political influence and rational decision making, Table 27 below displays the social perspectives that include additional influences of economic and education capitals.

Table 27: Substantive outcomes in the Factors concerning influence on decisions (after Cashmore *et al.*, 2004)

Structuring Evaluative Criteria	Variance in stakeholder satisfaction with participation adequacy reflected in the Factors					
	Very Satisfied Sufficient Core Belief	**Satisfactory Sufficient** Secondary Belief	Total	**Unsatisfactory Insufficient** Secondary Belief	**Very Dissatisfied Insufficient** Core Belief	Total
'Rational or political exercise' (after Cashmore *et al.*, 2004)						
a) Political influence	None	None	--	[PARK:F1]; [PARK:F2]; [MINE:F2]; [PRDA:F3]	[REDZ:F3]	**5**
b) Economic social capital	None	None	--	[MINE:F2]	[REDZ:F4]	**2**
c) Education social capital	None	None	--	[GAS:F4]	[GAS:F2]; [WIND:F4]; [REDZ:F2]; [REDZ:F2]	**5**

Table 27 indicates that in three of the cases there are corroborating factors [PARK:F1 PARK:F2][45], [MINE:F2; MINE:F3][46] and [REDZ:F3][47], where the stakeholders indicate a dissatisfaction with politically connected persons having a greater influence on decisions than other stakeholders. Going beyond the Cashmore's discussion of political influence, however, the factors also include the unacceptable

[43] [WIND:F4] 'The EIA public participation process was run competently and improves participants' understandings of others' beliefs, values, and perspectives'.
[44] [GAS:F4] 'The process does not improve participants' understandings (learning) of others' beliefs, values, and perspectives as discussion format did not allow for inclusive participation and relevant information from certain groups was ignored'.
[45] [PARK:F1] 'Stakeholders that were 'politically connected' controlled the process more than others'. [PARK:F2] '[…] It was not easy for some stakeholders to gain influence in the technical discussions and stakeholders that were 'politically connected' controlled the process more than others'.
[46] For example [MINE:F3] 'Stakeholders that were 'politically connected' controlled the discussions […]'.
[47] [REDZ:F3] '[…] stakeholders that were 'politically connected' controlled the discussions more than others'.

dominance in the public meetings by both the economically privileged [MINE:F2; REDZ:F4][48] and those who are highly educated [GAS:F2; GAS:F4; WIND:F4; REDZ:F2; REDZ:F2][49]. These social perspectives reflect a widespread mistrust of the process of EA, as well as a shared suspicion that there are aspects beyond the rational decision making model at play.

In contrast with the expected mistrust of political and economic power, the mistrust of educated persons in Cases 2, 3 and 5 is, at face value, more surprising. When reflecting on the participation experience however it corroborates the many factors which show high dissatisfaction [GAS:F1; GAS:F2; GAS:F4; MINE:F1; MINE:F5; REDZ:F1; REDZ:F4; REDZ:F5; REDZ:F2][50] with the perceived 'expert-driven process' already mentioned. Taken together, these social perspectives present a high dissatisfaction with the scientific and expert dominance of the process.

These social perspectives do not necessarily indicate that the stakeholders do not value expert input. In all cases, there are many calls for more rigorous and independent scientific input. The one factor [WIND:F4] that presents the dominance of highly educated persons in the process in a positive sense articulates this as [… adding quality to the sustainability of the decisions being made]. The social perspectives indicate a broad consensus that this perceived shortcoming could have been mitigated if the role of local knowledge had been valued more highly in the processes [GAS:F1; GAS:F2; GAS:F4; WIND:F3; MINE:F1; MINE:F3; MINE:F5; REDZ:F1; REDZ:F3; REDZ:F4][51]. It appears very important to the stakeholders, as expressed in these factors, that the process ought to place a higher value on their local knowledge and that the experts contributing scientific studies are peer reviewed and accepted by the stakeholders as being independent.

Cashmore *et al.* (2004) also suggest that an evaluation of environmental assessment needs to consider, *inter alia*, the integration of social, economic and ecological considerations, as well as consider how the EA contributes to sustainable development. As Table 28 below displays, four cases [PARK:F2; GAS:F3; WIND:F4; REDZ:F4][52] present factors that indicate stakeholder satisfaction with the integration of social, economic and ecological considerations in the decision making.

[48] [MINE:F2] 'Stakeholders from wealthier positions […] controlled the discussions more than others'. [REDZ:F4] '[…] Stakeholders from wealthier positions controlled the discussions more than others […]'.
[49] For example [GAS:F2] 'stakeholders with higher education controlled the discussion and relevant information from certain groups was ignored. Expert knowledge was valued more highly than local knowledge'. [REDZ:F2] 'Stakeholders with higher education controlled the process but those that were 'politically connected' did not'.
[50] For example [GAS:F2] 'stakeholders with higher education controlled the discussion and relevant information from certain groups was ignored. Expert knowledge was valued more highly than local knowledge'.
[51] For example [GAS:F1] '[…] expert knowledge was valued more highly than local knowledge […]'.
[52] For example [PARK:F2] 'Decisions […] integrated economic, social and ecological considerations […]'.

Table 28: Substantive outcomes in the Factors concerning sustainability: (after Cashmore *et al.,* 2004)

Structuring Evaluative Criteria	**Variance in stakeholder satisfaction with participation adequacy reflected in the Factors**					
	Very Satisfied Sufficient Core Belief	**Satisfactory Sufficient** Secondary Belief	Total	**Unsatisfactory Insufficient** Secondary Belief	**Very Dissatisfied Insufficient** Core Belief	Total
'Contribute to sustainable development' (after Cashmore *et al.*, 2004)						
a) Integration of social, ecological and economic considerations	[PARK:F2]; [GAS:F3]; [WIND:F4]	[REDZ:F4]	**4**	None	[MINE:F5]	**1**
b) Sustainability evaluation	[PARK:F1]; [GAS:F1]; [WIND:F4]	None	**3**	[MINE:F1]; [REDZ:F1]; [REDZ:F4]	[MINE:F2]; [PRDA:F4]; [MINE:F5]	**6**

Three cases each present one factor [PARK:F1; GAS:F1; WIND:F4][53] representing a belief held by a group of stakeholders in each case that this integration was satisfactory. MINE:F5[54] is the only factor with a strong dissatisfaction with this criterion. Likewise, the MINE case presents four factors [MINE:F1; MINE:F2; MINE:F4; MINE:F5][55] which suggest a firmly held belief in the stakeholder groups that the sustainability evaluation of the process was very unsatisfactory. Two REDZ factors [REDZ:F1; REDZ:F4][56] also indicate a similar, although not as strongly held, dissatisfaction with the sustainability outcomes of the SEA process.

4.4 CAPABILITY FINDINGS AS THEY RELATE TO PARTICIPATION 'OPPORTUNITY'

Capability indicators operationalized in this research (excerpt from Table 7)

Capability Indicators (after Anand *et al.*, 2007, p. 57)		**Empirical** or **Normative** focus	**Method 1** Report Analysis	**Method 2** Q-method - Participation Experience	**Method 3** Ranking Q-method	**Method 4** Participation experience survey
Type 1	Externally orientated questions about '**Opportunity**'.	**Empirical**	Indirectly	Specifically	Specifically	Specifically

The findings of Methods 2, 3 and 4 are discussed here regarding the individual's 'opportunity' to participate in environmental assessment considering the means and ends that they consider valuable. Method 2 incorporated key Q-statements with 'opportunity' criteria that the respondents placed within the interview response sorting frame according to their experience. Method 3 considers the prioritisation that stakeholders placed on 'opportunity' to participate in EA in their ranking of functional capabilities. Method 4 presents the survey responses of stakeholder opportunities for participation as well as considerations of tokenism in participation.

[53] For example [WIND:F4] '[…] They integrated social, ecological and economic perspectives'.
[54] [MINE:F5] 'Discussions valued expert knowledge above local knowledge, did not integrate social, ecological and economic perspectives and the public participation did not add quality to the sustainability of decisions being made'.
[55] For example [MINE:F2] 'The […] participation process […] did not add quality to the sustainability of decisions being made'
[56] For example [REDZ:F4] 'Although discussions integrated social, ecological and economic perspectives the public participation process did not add quality to the sustainability of decisions being made'.

4.4.1 METHOD 2 RESULTS: SOCIAL PERSPECTIVES ON 'OPPORTUNITY' FOR PARTICIPATION

The Q-statements that indicate individual capabilities in the social perspectives were placed by respondents in the Q-sorts in a variety of different ways. They reflect case specific and contrasting perspectives of agreement, disagreement and consensus for that particular statement. Of the 30 participation experience Q-statements, seven Q-statements were constructed to indicate 'opportunity' related individual capabilities.

Table 29: Q-statements indicating individual 'opportunity' aspects of capabilities

Qs3	I had an equal chance to voice my concerns.
Qs4	All important stakeholders took part in the process.
Qs5	Some affected parties could not participate for reasons that could have been overcome.
Qs7	The discussion format allowed for inclusive participation.
Qs8	The process did not exclude those less able to articulate their opinion.
Qs9	Financial resources were not provided to enable those who needed it to participate effectively.

The realistic opportunity, or chance, to contribute to decision making through putting forward one's perspective can provide an important 'combined' capability for meaningful participation. WIND:F2 is the only social perspective in all the cases (22 factors in total) that presents a stakeholder belief that they had equal opportunity for input of personal perspectives. In the WIND case, the social perspectives WIND:F1 and WIND:F2 refer to Qs3 in directly contrasting ways: WIND:F1 states [I did not have an equal chance to voice my concerns and relevant information from certain groups was ignored] and WIND:F2 claims that [I had an equal chance to voice my concerns]. In contrast the to WIND:F1, and in a similar fashion to WIND:F2, in the GAS case study, the only statistically significant statement that was disagreed upon amongst the six social perspectives was Qs3 [I had an equal chance to voice my concerns].The 'Secondary Belief' of GAS:F4 qualified the opportunity for input by correlation with two other statements, which combine to focus on the limited outcomes derived from an unrealized and partial opportunity: [I had a limited chance to voice my concerns and my values and opinions were not discussed] and [The process does not improve participants' understandings of others' beliefs, values, and perspectives]. The variance in the placement of Qs3 in the social perspectives suggests, in both the WIND and GAS cases, groups of stakeholders did not consistently realise the opportunities provided by the process. This could be expected of a heterogeneous stakeholder population and a process that does not cater for differing individual conversion factors regarding that opportunity.

In every population, there is a proportion of that population requiring capability support (Greco *et al.*, 2015). For example, considering special education needs alone, 15.4% of pupils in schools in England have been identified as needing capability support (UKDfE, 2015). If these particular capabilities statistics can be replicated across the cases, including high functioning cases such as Case Study 1, then it is possible to hypothesise that that capability deprivation in the social perspectives could be a property of the individuals in each society who would need that particular

capability support. In such a scenario, it would be difficult to differentiate between the individuals needing capability support, in the general case, and the procedural exclusionary factors associated with an inadequate process.

As Qs3 [I had an equal chance to voice my concerns.] is significantly disagreed upon in the GAS and WIND cases, together with corroborating Q-statements, but not in the other cases, valid questions can be asked of the process of those two cases. The focus of such a query is not on the groups of individuals in society who might naturally need capability support. Rather the placements of this Q-statement in the social perspectives strongly motivates for an enquiry into aspects of the procedure that may corroborate the exclusionary aspects indicated by that statement in those two cases. Referring back to the social perspectives for GAS, the factor descriptions include aspects such as GAS:F1 [The public participation process was not run competently. It was difficult for all stakeholders to influence the decision making process.] and GAS:F4 [The process excluded those less able to articulate their opinion […]]. GAS:F1 indicates general procedural challenges. GAS:F4 indicates the same process included individual capability challenges for the sub-group of stakeholders represented by that factor. For an evaluation of equity in participation, therefore, the capability statement Qs3 is a useful indicator to further probe both the procedural provisions for stakeholder input, as well as the individual conversion factors when considering the outcomes of those provisions through the corroborating realisation lens of functionings.

Two Q-method statements were framed to consider procedural provisions that would provide an opportunity for stakeholders who require assistance of some sort to express such felt need. Qs5 [Some affected parties could not participate for reasons that could have been overcome] and Qs9 [Financial resources were not provided to enable those who needed it to participate effectively] are reflected in the social perspectives with differing emphasis. Articulations of both in the social perspectives indicate deficiencies in the procedures which stakeholders considered significant regarding procedural exclusion and lack of adequate provision for inclusion of relevant stakeholders. PARK:F1 identifies that [financial assistance would have helped facilitate a broader input from affected parties who could not participate]. Other factors which agree with this notion are [GAS:F2; WIND:F1; MINE:F1; MINE:F3; MINE:F5; REDZ:F1; REDZ:F2; REDZ:F3][57]. However, all these cases articulate financial support from a lower functioning base than that in the PARK case. Where the [PARK:F1][58] and [MINE:F1; MINE:F5; REDZ:F2][59] social perspectives suggest that financial support would contribute towards a broader input, other factors [GAS:F2; WIND:F1; MINE:F3;

[57] For example [MINE:F1] '[…] financial support was not provided for those who needed it'.
[58] [PARK:F1] 'Financial assistance would have helped facilitate a broader input from affected parties who could not participate'.
[59] For example [MINE:F5] '[…] financial resources were not provided to enable those who needed it to participate effectively'.

REDZ:F1; REDZ:F3][60] indicate that the lack of financial support entrenched an exclusionary barrier which the factors frame in economic terms.

The poor and previously disadvantaged groups in South Africa have historically been burdened by having to live in environments that are neither clean nor healthy. Their exclusion from the processes is illustrated in the social perspectives. Qs5 [Some affected parties could not participate for reasons that could have been overcome] is often articulated in the factors associated with all cases, with close reference to the procedural provisions of financial assistance indicated in Qs9 [Financial resources were not provided to enable those who needed it to participate effectively]. In the social perspectives it is not immediately possible to disaggregate the procedural provisions of financial support [PARK:F1; WIND:F1; GAS:F2; MINE:F5; REDZ:F1; REDZ:F2; REDZ:F3; REDZ:F4] and the personal capacity obstacles [PARK:F1; WIND:F1; MINE:F1; MINE:F3] to be overcome. Certain factors combine financial support and personal capacity obstacles. Some stakeholders consider personal capacity challenges as obstacles that are distinct from financial challenges. This difference in emphasis in the social perspectives reflects a differing degree of sensitivity in the stakeholder groups regarding the financial cost of participation and its potential as an obstacle for the poor. It also indicates sensitivity to personal capacity constraints that may not be economically associated. This directly relates the combined capability 'opportunity' for participation with capability 'constraints'. The instrumental nature of the relationship is expressed in both provisional as well as personal commodity and capacity terms.

4.4.2 METHOD 4 RESULTS: 'OPPORTUNITY' IN THE INDIVIDUAL'S PARTICIPATION EXPERIENCE

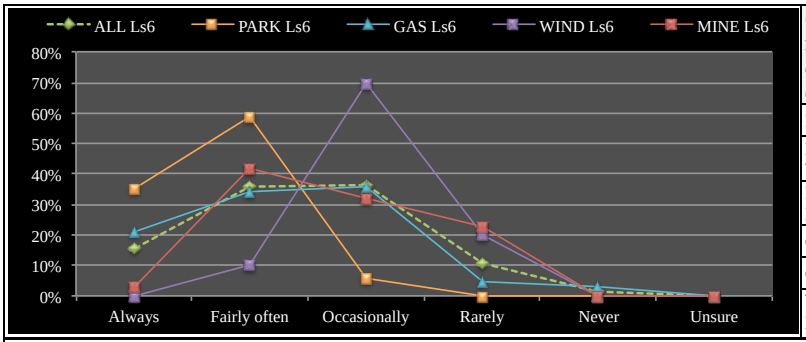
The capability Statement Ls6 [I am able to participate in environmental decision making that affects my life if I want to] is the key indicator of self-assessed participation opportunity. Figure 13 below compares the response distributions to Ls6 for all the EIA cases and contrasts each case distribution with the aggregate distribution for all the EIAs. Please refer to the footnotes of Figure 13 and Figure 14 for a brief explanation of the statistical terms and abbreviations used in the figures. They are standardised throughout the dissertation for graphs that display results from the Survey using evaluative Likert scales and important for understanding the analysis.

There is an interesting comparison between the individual capabilities that are provisions of the EA participation procedure ('combined capabilities') and those that are related to the stakeholder's capacities for achievement ('internal capabilities'). Both types of capability have instrumental implications regarding the 'opportunity' for participation. This section discusses both internal participation capabilities and combined capabilities as they are displayed in the Likert

[60] For example [GAS:F2] 'Some excluded affected parties could have participated in the process if financial resources were provided for them to do so'. [WIND:F1] 'Financial resources were not provided to enable those who needed it to participate effectively which led to the exclusion of the involvement from some less articulate affected parties'.

responses to Ls6 [I am able to participate in environmental decision making that affects my life if I want to] and Ls17 [The process provided opportunities where I could collaborate with other stakeholders] respectively.

Figure 13: Comparing the response distributions to Ls6



Correlation relationships of response distributions	Mann-Whitney Test[61] p-value[62]	Sig[63] (norm)	effect r[64]
PARK and GAS	0.01	YES	**0.28 (8%)**
PARK and WIND	1,43E-06	YES	**0.79 (63%)**
PARK and MINE	6,85E-05	YES	**0.56 (31%)**
GAS and WIND	0.00	YES	**0.38 (14%)**
GAS and MINE	0.02	YES	**0.22 (5%)**
WIND and MINE	0.06	NO	0.22 (5%)

DESCRIPTION of Variance (Alpha 0.05[65])

Groups	*All EIA Responses*[66]		*PARK*		*GAS*		*WIND*		*MINE*		**MEAN of cases**	**RANGE of cases**
	Count[67]	Variance[68]	Count	Variance	Count	Variance	Count	Variance	Count	Variance		
Ls6	129	0.88	17	0.35	60	0.97	19	0.32	30	0.74	**0.65**	**0.65**

There is a mean variance for Ls6 of 0.65 and a range of 0.65 across the four EIA cases. These response distributions and low variances displayed in Figure 13 above indicate that, despite case differences, for both positively and negatively associated developments, the stakeholders generally indicate positive responses to Statement Ls6. This indicates a general stability in the data across the cases for responses to Ls6. Uncharacteristic of a small sample size; the 17 PARK responses indicate the strongest realisation of this capability through exhibiting the smallest variance in response to Ls6 with a mode of 'Fairly Often'. The PARK responses exhibit the most positive indication that

[61] The Mann-Whitney Test for Two Independent Samples is used to compare differences between two independent groups when the dependent variable is either ordinal or continuous, but not normally distributed (Zaiontz, 2015). It is selected as appropriate for this research based on the indication in the descriptive statistics analysis, using the Shapiro-Wilk Test (Appendix 7.6.3), that identified the populations to be not normally distributed.

[62] The 'p-value' generally indicates if the relationship is statistically significant if $P < 0.05$, and statistically highly significant if $P < 0.001$ (less than one in a thousand chance of being wrong) (Zaiontz, 2015).

[63] 'Sig Norm': This indicates if the p-value is statistically significant (Zaiontz, 2015). In this case the relationship between the WIND and MINE distributions has a p-value of 0.06. This is outside the $P < 0.05$ (Alpha) range and therefore it is not considered significant or reliable. In contrast, the PARK and MINE relationship at 6,85E-05 is considered highly significant and less than one in a thousand chance of being an outlier or extreme event.

[64] 'effect r': This describes the relationship in terms of magnitude (Zaiontz, 2015). In this case the PARK and WIND correlation of 63% indicates a higher strength relationship than the 31% indicated by the PARK and MINE correlation.

[65] 'Alpha 0.05': Statistical significance is attained when a p-value (described in footnote above) is less than the significance level which is in turn denoted by the 'Alpha' (Zaiontz, 2015). In this case the Alpha of 0.05 indicates that of the 6 correlation relationships in the right hand column of the Figure, five of the relationships have significant p-values as they are less than 0.05. The WIND and MINE relationship indicates a p-value of 0.06 which is greater than the Alpha and therefore does not fit within these parameters of significance. This is confirmed with the 'NO' following the p-value. Reliable statistical inference can therefore not be made for the WIND and MINE correlation relationship for the response distributions for Ls6.

[66] Colour coding for the cases is standardised throughout the Tables and Graphs in the dissertation. Green indicates All EIA cases. Orange indicates the PARK case, light blue (Teal) indicates the GAS case, purple indicates the WIND case, red indicates the MINE case and dark blue indicates the REDZ case.

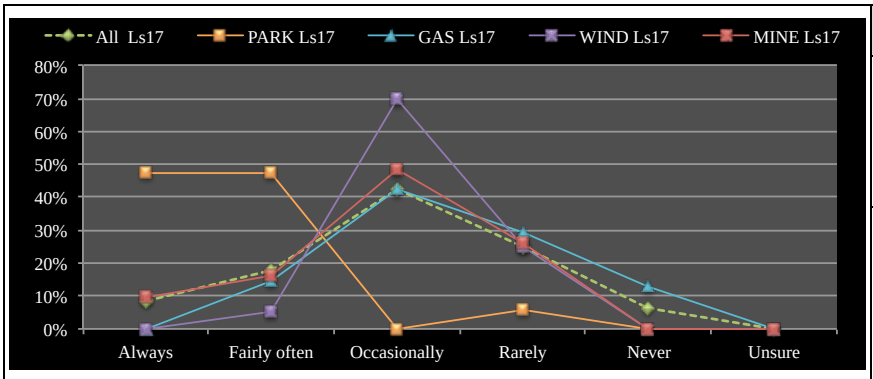
[67] The 'count' is the total number of responses for the population of that case. For each case this number is different as they are drawn from differently sized stakeholder populations. The 'count' number indicated is a representative selection of the 'active' registered interested and affected parties (See Section 3.5.2 and Appendix 7.1.2 for further explanation of these ratios).

[68] 'Variance' is a numerical value used to indicate how widely individuals in a group vary. If individual observations vary greatly from the group mean, the variance is large (Zaiontz, 2015). In this case the variance of 0.88 for All EIA responses indicates a large variance. The variances of 0.35 for the PARK case and 0.32 for the WIND case are both relatively smaller than those of the GAS (0.97) and MINE (0.74) cases.

respondents believed they are 'able to participate in environmental decision making that affects' their lives if they choose to do so. This can be partly attributed to the high-performing characteristics of the PARK case study. However, even in cases exhibiting very frustrated and dissatisfied stakeholders, as in the WIND and MINE cases, the opportunity indicated by Statement Ls6 remains relatively stable in the populations with the least positive responses (the WIND case) exhibiting a normal distribution in Figure 13 above. The WIND responses are less optimistic than the other cases, with a lower frequency of realising this opportunity. There are a few stakeholders who believe they can only realise this opportunity 'Rarely' (WIND and MINE). No case presents stakeholders who indicate that they were 'Unsure' if they possess this capability.

Figure 14 below, presents a comparison of the response distributions to Ls17 for all EIA cases and contrasts each case distribution with the aggregate distribution for all the EIAs. The distribution of responses is relatively similar to those displayed in the responses to Ls6 presented earlier in Figure 13 (p. 142) above. The similarity in responses to these two statements indicates a similarity in the self-assessed realisation of both internal (Ls6) and combined (Ls17) 'opportunity' participation capabilities. Statement Ls17 [The process provided opportunities where I could collaborate with other stakeholders], is a foundational statement upon which to consider the individual's opportunities for collaboration that have been provided by the EA procedure. Opportunities for collaboration are observed to be commonly experienced across the cases.

Figure 14: Comparing the response distributions to Statement Ls17



Correlation relationships of response distributions	p-value	Sig (norm)
Correlation GAS Ls17 & O3Cs[69] Ls17 MWT effect r: 0.61 (37%)	(MWT [70]) 7E-08	YES
PARK Ls 17 & O3Cs Ls17 MWT effect r: 0.48 (23%)	3E-08	YES
Correlation PARK Ls 17 & GAS Ls17 MWT effect r: 0.61 (37%)	(MWT) 6.6E-08	YES

DESCRIPTION of Variance (Alpha 0.05)

Groups	*All EIA Responses*		*PARK*		*GAS*		*WIND*		*MINE*		**MEAN of cases**	**RANGE of cases**
	Count	Variance	Count	Variance	Count	Variance	Count	Variance	Count	Variance		
Ls17	129	1.02	17	0.62	60	0.82	19	0.29	30	0.81	**0.71**	**0.73**

Figure 14 above displays that there is a normal distribution for Statement Ls17 across all the EIA cases with a mode of 55 (42,6%) of the 129 respondents experiencing the type of collaboration suggested by the rating 'Occasionally'.

[69] 'O3Cs' is an abbreviation for the other three cases. Here O3Cs means the PARK, WIND and MINE cases as the GAS case is compared with them.

[70] 'MWT' is an abbreviation for the Mann-Whitney Test for Two Independent Samples (Zaiontz, 2015).

Evaluation of collaboration needs to consider stakeholder actions both within, as well as those outside, the formal procedural structures and opportunities. Individual capabilities for collaboration need to not be limited to the procedural provisions but take cognisance of the autonomy of active networking individuals. However, the outcomes of these informal collaborations beyond the process are challenged as they do not necessarily lead to an influence on the decision making. Section 4.7 discusses this further in relation to stakeholder functionings. For the purpose of establishing responses indicating capability aspects that indicate participation opportunity, the prospects for collaboration and the chances to participate are both established in the responses to Ls6 and Ls17 above.

4.5 CAPABILITY FINDINGS AS THEY RELATE TO PARTICIPATION 'ABILITY'

Capability indicators operationalized in this research (excerpt from Table 7)

Capability Indicators (after Anand *et al.*, 2007, p. 57)		**Empirical** or **Normative** focus	**Method 1** Report Analysis	**Method 2** Q-method - Participation Experience	**Method 3** Ranking Q-method	**Method 4** Participation experience survey
Type 2	Explicit questions about personal **'Ability'** aspects of capability.	**Empirical**	N/A	Specifically	N/A	Specifically

Methods 2 and 4 are discussed here regarding the individuals 'ability' to participate in environmental assessment considering means and ends that they consider valuable. Method 2 incorporated key Q-statements with 'ability' criteria that the respondents placed according to their experience. The results from Method 4 present the Survey using evaluative Likert scales responses of stakeholder's 'ability' for participation.

4.5.1 METHOD 2 RESULTS: SOCIAL PERSPECTIVES ON 'ABILITY' FOR PARTICIPATION

Of the 30 Q-statements, two Q-statements are constructed to indicate individual 'ability' related capabilities and two Q-statements to indicate individual 'ability' related functionings.

Table 30: Q-statements indicating individual 'ability' aspects of capabilities and functionings

'Ability-type' Capabilities		**'Ability-type' Functionings**	
Qs8	The process did not exclude those less able to articulate their opinion.	Qs19	It was easy for me to gain influence in technical discussions.
Qs18	The discussions used language that I did not fully understand.	Qs20	It was hard to gain influence in discussions but I still contested to gain more impact.

4.5.1.1 METHOD 2 RESULTS: SOCIAL PERSPECTIVES ON 'ABILITY' FOR PARTICIPATION CONCERNING INDIVIDUAL CAPABILITIES

Qs8 [The process did not exclude those less able to articulate their opinion] focuses on the potential exclusionary aspects associated with an individual's ability to articulate their opinion in the EA participation. In contrast to the focus of other statements on procedural provisions (Qs5, Qs7 and

Qs9), the focus of Qs8 includes the individual's ability. GAS:F4 associates the exclusion of 'those less able to articulate their opinion' with other procedural deficiencies such as 'I did not feel comfortable and safe as a participant' and 'I had a limited chance to voice my concerns'. These are not necessarily framed as an articulation of personal capacity deficits however. Likewise, WIND:F3 associates the exclusion of [those less able to articulate their opinion] with the notion that the EIA public participation process 'was not run competently [and]… relevant information from certain groups was ignored'. MINE:F3 attributes this exclusion to the opinion that 'the discussion format did not provide for inclusive participation'. Although they are frequently associated, it is not possible to disaggregate the individual capability of articulation ability indicated in Qs8 from those of the procedural provisions for such articulation in these social perspectives. The GAS, WIND and MINE cases suggest that instances of inability to realise this capability are influenced more by exogenous procedural factors than individual conversion factors.

4.5.1.2 METHOD 2 RESULTS: SOCIAL PERSPECTIVES ON 'ABILITY' FOR PARTICIPATION CONCERNING INDIVIDUAL FUNCTIONINGS

Qs20[71] is crafted to indicate individual functionings that reflect the stakeholder's perception of their influence in the EA discussions. The statement indicates what a stakeholder perceived they were able to achieve. Five factors indicate stakeholders found it difficult to gain influence in the discussions [PARK:F2; GAS:F1; GAS:F3; WIND:F1; WIND:F3; REDZ:F3; REDZ:F5][72]. No factor indicates cases where stakeholders successfully contested to gain more influence [Qs20]. In these cases the difficulties are associated within the social perspectives together with other participation aspects such as political interference [PARK:F2][73], expert knowledge being valued more than local knowledge [GAS:F1][74], not being able to make mutually beneficial trade-offs with other stakeholders [GAS:F3; WIND:F1; WIND:F3; REDZ:F5][75], and individual's values and opinions not being discussed [REDZ:F3][76].

4.5.2 METHOD 4 RESULTS: 'ABILITY' IN THE INDIVIDUAL'S PARTICIPATION EXPERIENCE

This section presents a description and analysis of the findings from the Survey using evaluative Likert scales that indicates ability-type aspects of capabilities and functionings. The

[71] Qs20: 'It was hard to gain influence in discussions but I still contested to gain more impact'.
[72] [WIND:F3] 'It was not easy for me to gain influence in technical discussions nor discuss trade-offs with other stakeholders. My values and opinions were not discussed'.
[73] [PARK:F2] 'It was not easy for some stakeholders to gain influence in the technical discussions and stakeholders that were 'politically connected' controlled the process more than others'.
[74] [GAS:F1] 'It was difficult for many stakeholders to influence the decision making process and expert knowledge was valued more highly than local knowledge'.
[75] [REDZ:F5] '[…] negotiations (trade-offs) with other stakeholders were not possible for me and it was not easy for me to gain influence in technical discussions'.
[76] [REDZ:F3] 'Participants were courteous and respectful of my perspectives however it was hard to gain influence in discussions and my values and opinions were not discussed'.

survey's findings of the respondents' disabilities are briefly described followed by an analysis of capabilities and then observations on functionings. The stakeholder selection criteria and Survey using evaluative Likert scales aimed to identify aspects of, and representation for, stakeholders facing challenges of poverty and disability. The South African adapted Multidimensional Poverty Index (StatsSA, 2014a) is included in the survey to identify comparable poverty challenges. The MPI considers Lighting, Heating, Cooking, Water, Sanitation, Dwelling Type and Asset Ownership. The research also used the South African disability profile (StatsSA, 2014b) to identify six common disabilities in South Africa. The disability profile considers Sight, Hearing, Communication, Walking/Climbing stairs, Remembering/Concentrating and Self-care. None of the cases had respondents who indicated that they faced significant challenges to participation, to the degree specified by either of these indices, in any of the categories. In addition, no respondent volunteered or indicated a disability not included in the list. These indices are crude representations of poverty and disability. They are also inadequate indicators as a metric or measure for barriers to functionings. For example, the MPI does not consider such important considerations as food security or food nutrition. Based on the self-assessed responses to these categories this research carries the assumption that the respondents did not have these particular obstacles to their individual participation as they relate to 'ability'. Subsequent research could target these deprivation categories in more specific and contextually appropriate ways.

Figure 15 below presents the mean responses to nine capability Likert statements for the cases that include criteria indicating aspects of participation ability and contrasts each case distribution with the aggregate distribution for all the EIAs.

Figure 15 below indicates that the response means for the ability-indicating Statements Ls1, Ls2, Ls3 and Ls5 for all EIA cases are 'Always'. This indicates the majority of stakeholders' self-assessed realisation of each of those capabilities in the decision making experience. The research considers these self-assessed capabilities to be present and realisable 'ability' type capabilities for these responding stakeholders. It also discounts their potential as 'ability' obstacles to participation. The generally positive responses indicate that stakeholders consider these internal capabilities to be widely possessed. Ls1, Ls2 and Ls3 will not be discussed further as their relationship to the research aim is tenuous. They were included in the survey principally as a means to validate the responses to the capability Statements Ls4, Ls5 and Ls6 that indicate aspects of a participation capability set.

Figure 15: Mean responses to nine capability Likert statements

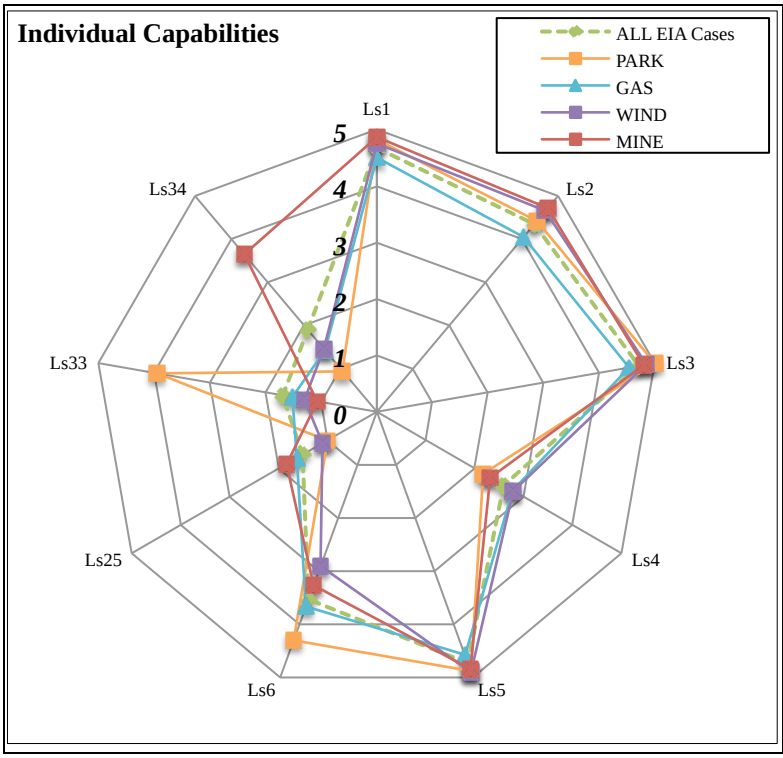
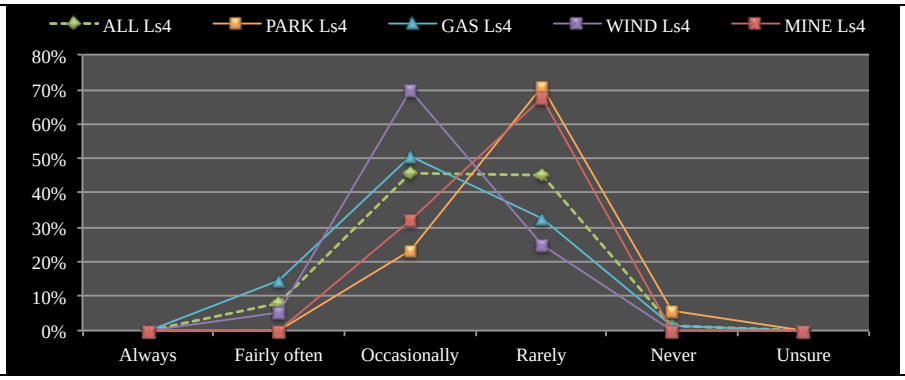


Chart Key		
	Ls1	My idea of a good life is based on my own judgement
	Ls2	I have a clear plan of how I would like my life to be
0 'Unsure' Case MEAN	Ls3	I respect, value and appreciate other people
1 'Rarely' Case MEAN	Ls4	I tend to find it difficult to imagine the situation of other people
2 'Occasionally' Case MEAN	Ls5	In general I appreciate and value plants, animals and the world of nature
4 'Fairly Often' Case MEAN	Ls6	I am able to participate in environmental decision making that affects my life if I want to
5 'Always' Case MEAN	Ls25	My participation was not allowed in the formal decision making process
	Ls33	I was empowered by the process to influence what I consider valuable regarding my future environment
	Ls34	I was disempowered by the process from influencing what I consider valuable regarding my future environment

Statement Ls5 is included in the survey in order to control for stakeholders who, in their self-assessment, do not consider themselves to 'appreciate and value plants, animals and the world of nature'. Disassociation with the world of nature is an important factor influencing the values and actions people take concerning their environment (Stern and Dietz, 1994; Stern, 2000; Taylor, 2007). This has been recently observed in the capabilities research in Khayelitsha, Cape Town, where Conradie and Robeyns (2013) explore women's aspirations in light of their capabilities. In their observations, the capability of "living with other species and with nature", corresponding to Ls5, was not seen as a priority with respondents laughing at the researcher for proposing that it might be so (Conradie and Robeyns, 2013, p. 572). The focus of this research is on the participatory application of the Nussbaumian (2003) capability set of '***control of one's political environment***' and there are many legitimate reasons why a stakeholder engages with an EA process that are not primarily based on their affiliation with the world of nature. The value base that provides reasons for why a stakeholder gets involved with the process, and their decision making actions therein, are however assumed to be closely related to the ***Affiliation*** capability indicated in Ls5. No response was lower than 'Occasionally' for Ls5 and the aggregate data and case study data present means and modes of 'Always'. This affiliation capability is generally present as an ability in the responses of the sample populations even if it contrasts with the low ranking value of the capability indicated by the work of Conradie and Robeyns (2013).

Figure 16 below presents the response distributions to Statement Ls4 in all the EIA cases and contrasts each case distribution with the aggregate distribution for all the EIAs.

Figure 16: Comparing the response distributions to Ls4



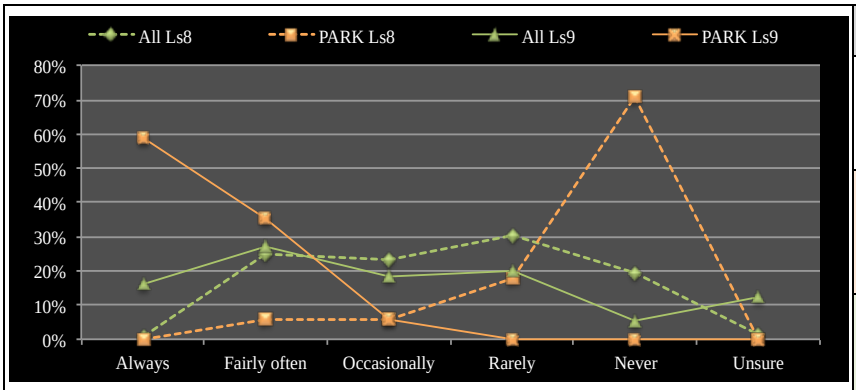
DESCRIPTION of Variance (Alpha 0.05)

Groups	*All EIA Responses*		*PARK*		*GAS*		*WIND*		*MINE*		**MEAN of cases**	**RANGE of cases**
	Count	Variance	Count	Variance	Count	Variance	Count	Variance	Count	Variance		
Ls4	129	0.43	17	0.28	60	0.51	19	0.29	30	0.23	**0.35**	**0.23**

Although stakeholders believed they realized a number of key 'ability' related capabilities like Ls1, Ls2, Ls3 and Ls5 'Always', 46% of the respondents tend to find it difficult to imagine the situation of other people 'Occasionally' [Ls4]. Figure 16 above indicates that an almost equal number of 45% experience this 'Rarely' which presents a positive skew to the response distribution for Ls4. This suggests that, compared with the responses to Ls1, Ls2, Ls3 and Ls5, Nussbaum's ***Affiliation*** Ls4 [being able to live with and towards others] presents a greater challenge to the stakeholder's participation functioning considering empathy towards another stakeholder's perspective and for social interactions. This does not suggest capability deficiency however. When comparing the normal distribution pattern in the aggregate data with those of the individual cases together with the low variance across the cases (0.23), as well as within each case study there is however no reason to suggest that this response distribution indicates an atypical distribution. These responses, therefore, do not indicate an internal deprivation of this ***Affiliation*** ability capability that could be considered a barrier to participation (Nussbaum, 2003). Further, the low variance of responses confirms the stability of the capability as present in the populations.

Figure 17 below presents a comparison between the response distributions to Statement Ls8 [I was a passive stakeholder in this process] and Statement Ls9 of the PARK case and contrasts the PARK distribution with the aggregate distribution for all the EIAs. The mean responses for statements indicating individual ability related functionings present a wider range of response distributions than those indicating aspects of individual capabilities. These statements attempt to indicate aspects of action, achievement or in CA terminology 'beings and doings' the stakeholder considers valuable.

Figure 17: Comparing the PARK response distributions to Ls8 and Ls9 with All EIAs



Correlation relationships of response distributions	p-value	Sig (norm)
Correlation	(MWT)	
PARK Ls8 & OTCs Ls8		
MWT effect r: 0.38 (14%)	1E-05	YES
PARK Ls9 & OTCs Ls9		
MWT effect r: 0.43 (18%)	2E-06	YES
Case Correlation	(WSRT)	
PARK Ls8 & PARK Ls9		
WSRT[77] effect r: 0.61 (37%)	0.00	YES
SRCC[78]: -0.55		
All cases Correlation	(WSRT)	
All Ls8 & All Ls9		
WSRT effect r: 0.26 (7%)	5E-05	YES
SRCC: -0.31		

DESCRIPTION (Alpha 0.05)

Groups	*All EIA Responses*		*PARK*		*GAS*		*WIND*		*MINE*		**MEAN of cases**	**RANGE of cases**
	Count	Variance	Count	Variance	Count	Variance	Count	Variance	Count	Variance		
Ls8	127	1.20	17	0.76	58	1.31	19	1.39	30	0.24	**0.98**	**1.15**
Ls9	113	1.44	17	0.39	50	1.67	16	0.87	27	0.52	**0.98**	**1.28**

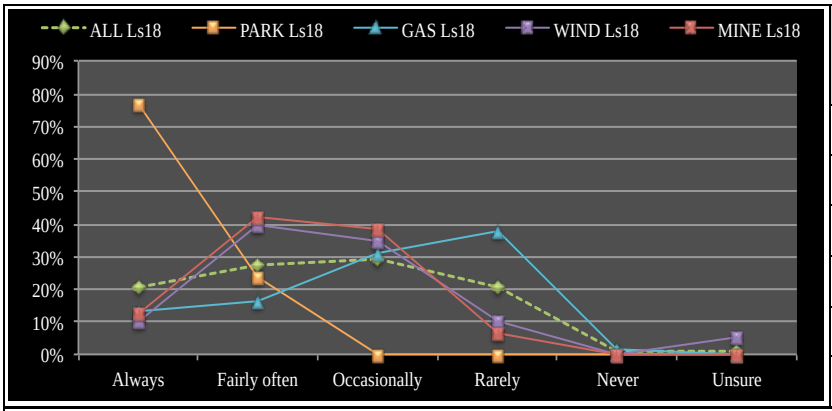
Statement Ls9 [I achieved more through collaborating with others], received all possible range responses. The PARK responses to Statement Ls9 [I achieved more through collaborating with others] indicate that in more than half of the PARK responses, the collaborative aspects of the process did achieve the stakeholder's desired outcomes. Figure 17 above displays that of the 129 respondents, 35 (27%) stakeholders responded with 'Fairly Often' to this statement, 21 (16,3%) indicated 'Always' and 24 (18,6%) designated 'Occasionally', indicating that over half the respondents achieved the functioning of collaboration. This was not the case for all as 26 (20%) respondents experienced achievements through collaboration 'Rarely' and seven (5,4%) 'Never', with the remaining 16 (12,4%) unsure about their achievement through collaboration. If those responding 'Rarely' and 'Never' are grouped together, (discarding those who responded 'Unsure'), 21% of stakeholders remain from all EIAs that did not realise collaborative functionings. When reflecting on the number of stakeholders that considered themselves as 'active' participants the observations of collaboration are confirmed. The distribution of responses for Ls9 closely follows the general trend of responses to Ls7 [I was an active stakeholder in this process]. This is not surprising as the more active a stakeholder was, the more likely they could be in achieving collaborative outcomes.

[77] 'WSRT' is an abbreviation for Wilcoxon Signed Rank Test. The Wilcoxon signed-rank test is the nonparametric test equivalent to the dependent t-test. As the Wilcoxon signed-rank test does not assume normality in the data, it can be used when this assumption has been violated and the use of the dependent t-test is inappropriate. It is used to compare two sets of scores that come from the same participants (Zaiontz, 2015).

[78] 'SRCC' is an abbreviation for Spearman's rank correlation coefficient or Spearman's rho. The Spearman's rank-order correlation is the nonparametric version of the Pearson product-moment correlation. It measures the strength of association between two ranked variables (Zaiontz, 2015). The negative correlation displayed in the PARK case of -0.55 (SRCC), indicates a significant and moderate correlation. This indicates that the responses for Ls8 and Ls9 were responded to in a way that is to a limited degree relatable to each other. The graph distributions illustrate this. The two response ranges for Ls8 and Ls9 in the PARK responses, (indicated in orange), mirror each other. For Ls8 there is strong agreement with the 'Always' mode, whereas for Ls9, there is strong disagreement with a mode of 'Never'. They both also have very few responses indicating 'Occasionally'. In contrast, although the graph suggests that the aggregate response distributions for Ls8 and Ls9 are closely related, (indicated in green), the correlation relationship between the response distributions for these two statements is weaker at -0.31 (SRCC). The use of the SRCC is therefore useful for the analysis in order to provide a verification and validity qualification to the observable trends in the data.

The Survey using evaluative Likert scales explored the self-assessed ability of reason giving by the stakeholders in the public participation process. Statement Ls18 is phrased, 'I was able to give a reasoned explanation of my perspective'. The distribution in the adequacy of explained reason giving in the EIA cases is displayed in Figure 18 below and contrasts each case distribution with the aggregate distribution for all the EIAs.

Figure 18: Comparing the response distributions to Ls18



Correlation relationships of response distributions	Mann-Whitney Test		
	P-value	Sig (norm)	Effect r (r^2)
PARK Ls18 and GAS Ls18	2.85E-07	YES	**0.57 (32%)**
PARK Ls18 and WIND Ls18	3.89E-05	YES	**0.68 (46%)**
PARK Ls18 and MINE Ls18	3.96E-06	YES	**0.01 (0%)**
GAS Ls18 and WIND Ls18	0.02	YES	**0.24 (6%)**
GAS Ls18 and MINE Ls18	0.00	YES	**0.28 (8%)**
WIND Ls18 and MINE Ls18	8.63E-05	YES	**0.89 (79%)**

DESCRIPTION (Alpha 0.05)

Groups	*All EIA Responses*		*PARK*		*GAS*		*WIND*		*MINE*		**MEAN of cases**	**RANGE of cases**
	Count	Variance	Count	Variance	Count	Variance	Count	Variance	Count	Variance		
Ls18	128	1.15	17	0.19	60	1.17	18	0.73	30	0.60	**0.77**	**0.98**

This distribution of responses indicates that at an individual level this aspect of Nussbaum's (2003) capability of ***Practical Reason*** was self-assessed to be 'Rarely' achieved by 20% of the stakeholders in the aggregate responses. The distribution of responses to Ls18 indicate that ***Practical Reason*** was realized 'Fairly Often' by 28% of the respondents and 'Occasionally' by about 30% of respondents. Figure 18 above indicates a variation that is case rather than individual specific. The case differences were not expected as the statement was crafted to indicate personal ability in reason giving. The survey assumed that responses to this statement would indicate individual reason giving ability as an individual capability and as a variable that is independent of procedural or social influence. The responses to Ls18 were expected to have a more normal distribution within each case as well as in the aggregate distribution across the cases. The responses however suggest that there are participatory conditions that allow for adequate reason giving that facilitate or hinder the realization of the individual's ability. This is observed in contrasting the response distributions of the WIND and MINE cases in Figure 18 above with those of the PARK or GAS cases. The WIND and MINE response distributions are very similar to each other correlating with a very strong effect r of 0.89 (MWT). In contrast, the PARK or GAS response distributions are different to each other, as well as different to the WIND and MINE distributions. The responses suggest that it is not necessarily the individual's ability to form a scientific argument that counts, but the provisions of the process to incorporate that perspective, however ably represented, into the decision making. The high confidence in the PARK case study is an interesting finding. There is also a narrow distribution in the PARK

data, with a small interquartile range, which indicates a low variation, almost evenness, in the functioning experience amongst individual stakeholders. This implies a significant confidence that these PARK respondents were able to give a reasoned explanation of their perspectives despite the PARK case's heterogeneity of education and first language characteristics.

The amoeba chart in Figure 19 below shows the mean responses to six functionings statements that indicate ability-type aspects and contrasts each case mean with the aggregate for all the EIAs.

Figure 19: Mean responses to six 'functioning' Likert statements

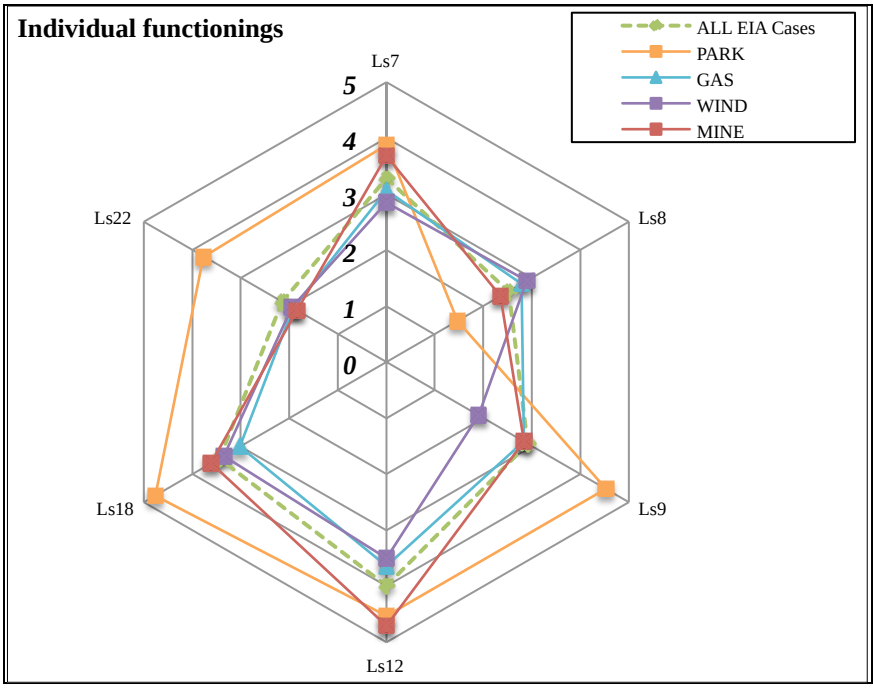


Chart Key		
	Ls7	I was an active stakeholder in this process
0 'Unsure' Case MEAN	Ls8	I was a passive stakeholder in this process
1 'Rarely' Case MEAN	Ls9	I achieved more through collaborating with others
2 'Occasionally' Case MEAN	Ls12	I considered the rights of future generations in my participation
4 'Fairly Often' Case MEAN	Ls18	I was able to give a reasoned explanation of my perspective
5 'Always' Case MEAN	Ls22	My participation allowed me to influence what I consider valuable regarding my future environment

In Figure 19 above the mean responses to Ls18 can be compared with the mean responses to other statements that indicate participation achievement and ability functionings. The trend in means across the cases displayed in Figure 19 above indicates that the general functioning of stakeholders that is displayed in the aggregate data is similar to the experience of the GAS, WIND and MINE cases. The mean responses for Ls18 corroborate the observation of the case response distributions and modal observations in Figure 18 (p. 150) previously discussed. The PARK case stands out as different to the others for Ls9, Ls18 and Ls22. Unlike the other cases, the PARK case indicates that the stakeholders' ability to provide adequate reason giving in participation [Ls18] was facilitated through the provisions of the process [Ls22] and that achievement was a collaboratory activity [Ls9]. This locates the participation ability implied in Ls18 as a 'socially dependent individual capability' as the case results indicate the realization of the ability is both procedurally and collaboratively associated and thereby potentially enhanced or curtailed. The discussion to follow will illustrate how understanding the participation experience of the stakeholder and their level of active collaboration

will further illustrate the importance of considering individual abilities within their social context in order to attribute their significance to participation functionings and as a realizable capability.

Figure 20 below presents the mean responses to the Likert statements that indicate collaborative actions and contrasts each case distribution with the aggregate distribution for all the EIAs.

Figure 20: Average responses per case for Likert statements indicating collaboration

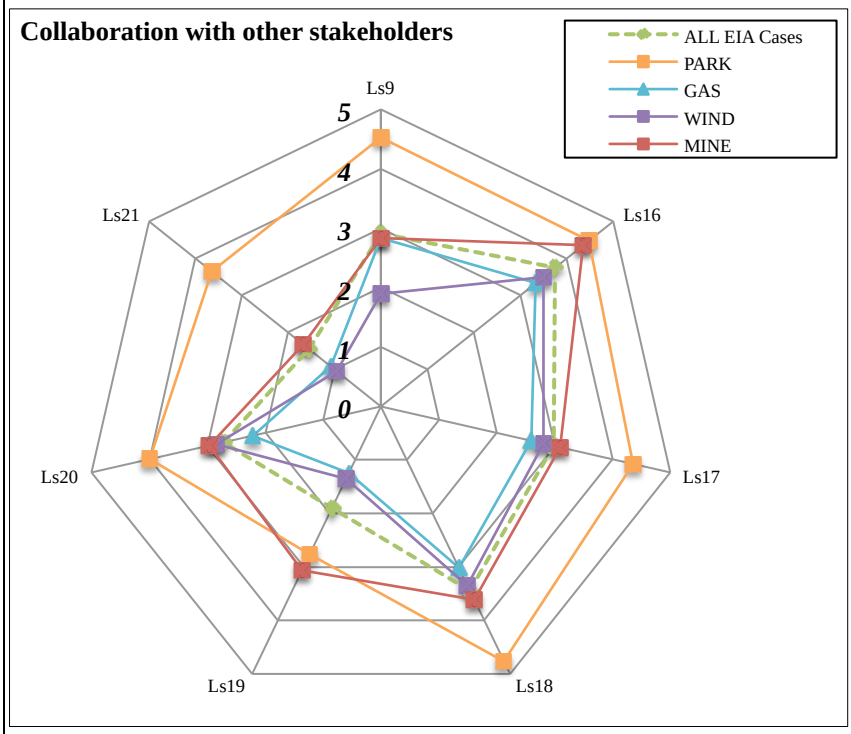


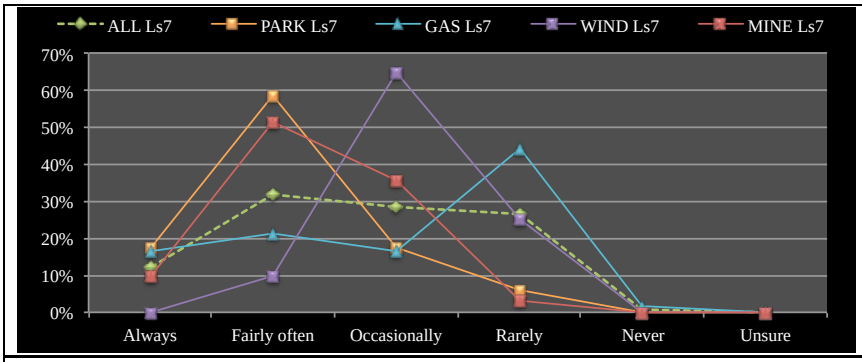
Chart Key		
	Ls9	I achieved more through collaborating with others
0 'Unsure' Case MEAN	Ls16	I found other stakeholders who shared my views
1 'Rarely' Case MEAN	Ls17	The process provided opportunities where I could collaborate with other stakeholders
2 'Occasionally' Case MEAN	Ls18	I was able to give a reasoned explanation of my perspective
4 'Fairly Often' Case MEAN	Ls19	I was able to change the mind of another stakeholder
5 'Always' Case MEAN	Ls20	I have changed my attitude through engaging in discussion with another stakeholder
	Ls21	I was able to change the attitude of another stakeholder

Aspects of collaboration with other stakeholders present a wide range of responses both within and across the cases. The amoeba chart in Figure 20 above indicates that on average for the case, the PARK case study involved significantly more effective functioning characteristics of collaboration. The MINE mean responses exhibited aspects of collaboration, but also deficiencies in other critical areas. The WIND case presents stakeholder opinions of aspects of collaboration in the mean responses to be very poor. Statements Ls18, Ls19, Ls20 and Ls21 describe stakeholder collaboration actions that involve the following: reasoned explanation [Ls18], changing the mind of another stakeholder [Ls19], changing a personal attitude [Ls20] and changing the attitude of another stakeholder [Ls21]. The responses to these statements are expected to interact with each other under conditions where effective deliberation or collaborative dialogues occur. As can be expected however even under circumstances where a reasoned explanation was given there is no immediate relationship between an explanation, the reasons given and changes brought about in other stakeholders.

In all of the cases the majority of the stakeholders considered themselves to be 'active' participants. Stakeholders selected from the EA databases were intentionally selected out of the list as those that displayed significant contributions to the public meetings or in terms of written comments. It is therefore expected that the degree of activity of this sample of 'active' participants would be higher than the general stakeholder and higher than the average citizen. Although some stakeholders did not consider themselves as 'active' participants, those same stakeholders do not necessarily consider themselves as 'passive' participants. This could be due to a survey design flaw. The survey design did not foresee that respondents might have negative connotations to the word 'passive'. It is possible that some respondents did not indicate their participation as 'passive' as it can denote a colloquial association in South Africa of submissiveness or docility. Nonetheless, the responses indicating 'passive' participation could also indicate that individual stakeholders consider themselves as not participating in the process in the extroverted way that they perceive the word 'active' to suggest.

Figure 21 below illustrates the contrasting response distributions to Ls7 [I was an active stakeholder in this process] for each case and contrasts each case distribution with the aggregate distribution for all the EIAs.

Figure 21: Comparing the response distributions to Ls7



Correlation relationships of response distributions	p-value	Sig (norm)
Correlation	(MWT)	
PARK Ls7 & O3Cs Ls7 MWT effect r: 0.22 (5%)	0.00	YES
GAS Ls7 & O3Cs Ls7 MWT effect r: 0.28 (8%)	0.00	YES
Case Correlation	(MWT)	
GAS Ls7 & PARK Ls7: MWT effect r: 0.28 (8%)	0.00	YES

DESCRIPTION of Variance (Alpha 0.05)

Groups	*All EIA Responses*		*PARK*		*GAS*		*WIND*		*MINE*		**MEAN of cases**	**RANGE of cases**
	Count	Variance	Count	Variance	Count	Variance	Count	Variance	Count	Variance		
Ls7	129	1.03	17	0.61	60	1.40	19	0.36	30	0.51	**0.78**	**1.04**

Statement Ls7 has a slightly negatively skewed distribution with a mode of 'Fairly Often' (31%) in the aggregate responses for all the EIAs. The individual cases contrast this aggregate distribution and each other significantly in Figure 21 above. Comparing the 'Rarely' (64%) mode of responses for Ls7 in the GAS case, and the PARK 'Fairly Often' (59%) mode, there is a clear distinction between the characteristics of activity in the cases. The majority of MINE stakeholders considered themselves to be 'active' participants to a similar extent as the PARK respondents. The discussion to follow however will illustrate that the self-perceived level of activity of stakeholders does not indicate a realizable influence on the decision making outcomes. Satisfaction with the participation process is also demonstrated to not be consistently related to indicated activity. Although

they are related in the PARK case, as demonstrated in the previous discussions of Figure 18 (p. 150), the MINE, WIND and GAS cases present differing outcomes and differing levels of 'activity'. The validity of capability and functioning achievement can only be grounded upon 'active' stakeholders. Where responses to Statement Ls22 [My participation allowed me to influence what I consider valuable regarding my future environment] are presented with a mode of 'Rarely' it contrasts with the activity-indicating mode of 'Fairly Often' for Ls7 [I was an active stakeholder in this process]. The range of responses to these two statements highlights the difference in functionings between active participation and actual/valued influence. From these aggregate results, the cases suggest that activity in participation does not necessarily lead to influence through participation. The discussion to follow will illustrate that, in contrast with the PARK case, the high level of activity in the MINE case led to unfavourable outcomes and the low level of activity in the GAS case led to outcomes the stakeholders desired but a process that they found objectionable.

Gaining a deeper insight into the relationships between the individual's realistic, opportunities for valuable action (their 'capabilities') and their realized actions (their 'functionings') helps to contextualise their realized utility and thereby gain a more informed evaluation. Statement Ls17 states that 'The process provided opportunities where I could collaborate with other stakeholders'. Combining an evaluation of the responses to Statements Ls17, Ls7 and Ls22, highlights that although the GAS respondents rarely 'influenced what they consider valuable regarding their future environment' [Ls22], which can be associated with a low degree of utility during the process, their lack of 'active' engagement with other stakeholders in 'collaborative' forms does not necessarily indict the EA procedure. The responses to Ls17 clearly show a mode where the majority of stakeholders acknowledge that they were provided with the opportunity from the process; they simply chose to not engage with it.

Acting strategically in this way has become an emerging trend in South Africa where stakeholders have chosen to rely on legal options of appeal rather than get involved in the participatory process of *ex-ante* decision making. This research stresses the potential for decision shaping by stakeholders and decision support for stakeholders to participate meaningfully in environmental assessment. In the GAS case study, this action worked in the favour of stakeholders who were opposing the development. There are numerous instances in the issues and responses report where stakeholders lodge their comment regarding a refusal to engage further in the process and a preference to rather take legal action with an appeal if the development was granted. This reflects an attitude in the stakeholders that their ability to influence the process was considered to be greater through legal means of appeal than through engaging in the EA participation process. After minimal engagement with the public participation process, an action group threatened legal proceedings regarding the substantive aspects of the development as well as a lack of due diligence on the part of the developer regarding legal precedence for an offshore facility of that type, and the proposal was

withdrawn. This highlights the inadequacy of sole reliance on preference or happiness measures for considering public participation in EA. In light of this, the stakeholder dissatisfaction in the GAS responses, for the majority who were opposing the development, does not equate with the final outcome. The responses reflect dissatisfaction with the participation process and its ability to rarely 'allow one to influence what they consider valuable regarding my future environment' [Ls22], yet the final outcome, of the development being withdrawn, eventually satisfied the desired participants' ends. Without the mandatory participation process of the EA Scoping exercise, these stakeholders may not have had the motivation they had to both engage with the process as well as act strategically beyond the process.

4.6 CAPABILITY 'CONSTRAINTS' AS BARRIERS TO PARTICIPATION

Capability indicators operationalized in this research (excerpt from Table 7)

Capability Indicators (after Anand *et al.*, 2007, p. 57)		**Empirical** or **Normative** focus	**Method 1** Report Analysis	**Method 2** Q-method - Participation Experience	**Method 3** Ranking Q-method	**Method 4** Participation experience survey
Type 3	Explicit '**Constraint**' questions.	**Empirical**	Specifically	Specifically	N/A	Specifically

The results of Methods 1, 2 and 4 are discussed in this section regarding the individual's 'constraints' to participate in environmental assessment. Method 1 evaluates the consideration of overcoming typical barriers to participation in the Report Analysis. Method 2 incorporates key Q-statements with 'constraint' criteria that the respondents placed according to their experience. Method 4 presents the responses to the Survey using evaluative Likert scales of stakeholder capability constraints in participation.

4.6.1 METHOD 1 RESULTS: 'CONSTRAINTS' TO PARTICIPATION REFLECTED IN THE REPORT ANALYSIS

This research combines the report analysis with empirical interviews and surveys in order to address these two forms of reflective exploration of the cases. The Report Analysis provides a hermeneutical base and context for the findings of the complementary empirical methods. The criteria for this evaluation are developed from what the EA literature identifies as 'barriers' to participation. The analysis focuses on how selected barriers were considered in the EA reports in relation to the realistic opportunities for stakeholders to effectively and equitably participate. The reader is encouraged to consider how infrequently there is an adequate consideration of obstacles to participation in the EA reports. The reports seldom show a contextual understanding of the likely EA 'barriers' and show how infrequently there is an adequate follow-through regarding mitigation for or overcoming the identified 'barriers'. Table 31 below provides a summary of the inclusion of the

known barriers to participation in the EA reports of the five case studies. This table is a summary of the Report Analysis of each case which can be found in Appendix 7.1.

Table 31 indicates that most of the barriers identified in the literature were not considered in the EA reports. The discussion to follow describes how the barriers that were mentioned were dealt with in the cases.

Table 31: Summary of the consideration of 'barriers' to participation as contained in the EA reports

'Barrier' to participation	**Case Study 1 PARK**	**Case Study 2 GAS**	**Case Study 3 WIND**	**Case Study 4 MINE**	**Case Study 5 REDZ**
Poor public knowledge of planning, legal and licensing issues.	1.2.3.	1.2.3.	☹	1.2.3.	1.2.3.
Poor provision of information.	☺	a.b.	☹	1.2.3.	1.2.3.
Poor access to legal advice.	1.2.3.	1.2.3.	a.b.	1.2.3.	1.2.3.
Mistrust of the industry.	1.2.3.	a.b.	a.b.	a.b.	☺
NIMBY syndrome.	1.2.3.	1.2.3.	a.b.	a.b.	a.b.
Failure to influence the decision making process.	1.2.3.	1.2.3.	1.2.3.	a.b.	☹
Poor execution of participation methods.	1.2.3.	1.2.3.	a.b.	a.b.	☹
Regulatory constraints.	1.2.3.	a.b.	☹	a.b.	a.b.
Authorization efficiency.	1.2.3.	1.2.3.	1.2.3.	a.b.	☺
Expert/elitist approach to EA.	1.2.3.	a.b.	☹	a.b.	☺
Length of comment periods.	1.2.3.	1.2.3.	☹	a.b.	☺
Emerging participatory democracy.	1.2.3.	1.2.3.	1.2.3.	1.2.3.	1.2.3.
Poorly understood *Locus standi.*	1.2.3.	1.2.3.	☹	a.b.	1.2.3.
No guarantee of formal participation.	1.2.3.	a.b.	1.2.3.	a.b.	1.2.3.
'Invisible' stakeholders.	1.2.3.	1.2.3.	1.2.3.	1.2.3.	1.2.3.
Inadequate scientific knowledge.	☺	a.b.	☹	a.b.	a.b.
Lack of public capacity support, education & empowerment for participation.	☺	a.b.	1.2.3.	1.2.3.	1.2.3.
Inappropriate language used.	1.2.3.	1.2.3.	a.b.	1.2.3.	1.2.3.
HIV/AIDS.	1.2.3.	1.2.3.	a.b.	1.2.3.	1.2.3.
Inadequate internet and email connectivity.	1.2.3.	1.2.3.	a.b.	1.2.3.	1.2.3.
Inadequate personal time for participation.	☺	a.b.	a.b.	a.b.	1.2.3.
Poverty and/or Unemployment.	☺	☹	☹	a.b.	☺

Key: Category	Explanation of table code and shading scheme.	
Barrier absent	1. No report in the EA mentions the challenge associated with barrier. 2. The EA reports do not identify it as a relevant issue nor do they identify it as irrelevant. 3. The barrier is not mentioned nor integrated in any EA report.	
Barrier mentioned	The 'barrier' is mentioned and discussed, however: a. The EA reports do not identify it as a relevant issue nor do they identify it as irrelevant. b. The barrier is not integrated in any EA report.	
Barrier acknowledged	☹ Barrier acknowledged but not mitigated for.	See discussion below for explanation of how identified barriers were dealt with in each case.
Barrier mitigated	☺ Barrier identified and indicated as satisfactorily mitigated.	

Most of the reports superficially mention, identify and discuss the challenge associated with an expert or elitist approach to EA. The PARK BA and EMP occasionally refer to difficulties around adequate information provision as it relates to stakeholders' understandings of the project and their potential involvement in the EMP and other mitigation strategies. Some GAS and WIND stakeholders base their objecting arguments on inadequate scientific knowledge and inadequate provision of information. Groups of GAS, WIND, MINE and REDZ stakeholders are recorded in the reports as

holding reservations regarding the independence and adequacy of the scientific studies; however these complaints are not specifically linked to negatively affecting their participation experience. A number of GAS, WIND and MINE stakeholders are recorded in the reports indicating their lack of trust in the independence of the EAP and the developer. They indicated that they would prefer to not continue with discussions regarding alternative designs, and rather, would prefer to take the decision on appeal if the proposal was authorised. This reflects an absence of trust in the process by these stakeholders and a suspicion that political and economic influences might override the influence of local stakeholder concerns. Several MINE stakeholders frame their objections to the development out of concern that despite engaging with the public participation process they do not feel confident that their concerns would be incorporated into the decision making. They are specifically concerned that their raised issues would be subordinated to the economic and strategic resource development agenda of the development.Many MINE stakeholders found it difficult to understand the parallel process of the EIA and the MPRDA (mining application process). It remained unclear in the reports which minister was responsible for final authorization and which minister was responsible for appeal procedures. This confusion of procedural process was conflated with the substantive issues in the reports. Certain GAS stakeholders based their objecting arguments on a sound understanding of their constitutional rights and the lack of relevant regulations governing similar offshore developments. Likewise, some WIND stakeholders displayed a sound understanding of their constitutional rights and the relevant regulations governing wind energy developments.

No stakeholders are recorded in the reports as asking for, or citing, regulatory expectations for capacity support, education and empowerment for participation. Challenges associated with public capacity support, education and empowerment for participation is raised in the PARK BA, in the associated Botanical Assessment and the Freshwater Assessment. The involvement of the poor and some unemployed persons in the decision making process was integrated into the public participation process through weekly community meetings that were open to the local residents and who were then represented in the technical process by an NGO. The NGO would explain the reports in an appropriate way, using colloquial and appropriate language (isiXhosa), and provided a forum for questions regarding the project that ran parallel to the BA public participation and informed the decision making.

The WIND and MINE reports superficially mention, identify and discuss the challenge associated with the short length of comment periods. Despite being mentioned by many reports it is unclear if this barrier is acknowledged in the reports as a relevant challenge to the effectiveness or equity considerations of the process. Some stakeholders base their reasons for inclusion of their input into the project design based on the need for a more collaborative and comprehensive perspective. Many PARK local community stakeholders volunteered ideas for how the project could better facilitate the community’s vision for economic opportunities and job creation. Some of their ideas

were incorporated into the project design. In contrast, the GAS and MINE cases exhibit instances where constructive technical contributions from RI&APs were not welcomed by the EAP nor were they included in the design considerations.

South Africa has a prevalence rate of "16.6 per cent of adults (aged 15-49)" of its population estimated to be HIV-positive (Stats-SA, 2015, p. 1). Statistically, it is surprising to suggest that in South Africa, HIV and AIDS do not have an 'obstacle' type effect on at least some of the stakeholders who could be living with or caring for those affected by the disease. Yet this barrier is not mentioned in any of the five selected EAs as a 'barrier' nor is it provided for with special measures of support for participation. These observations in the cases reflect systemic practice challenges that are identified in the literature. For those barriers that were superficially mentioned, in many instances the barriers mentioned were not identified as obstacles to participation. The same barriers were not explicitly excluded from the considerations as barriers to participation. The evaluation employed here demonstrates that the EA reports in the cases observed pay inadequate attention to, and limited consideration of, the likely capability constraints that stakeholders face in participation.

4.6.2 METHOD 2 RESULTS: SOCIAL PERSPECTIVES ON 'CONSTRAINTS' TO PARTICIPATION

Of the 30 participation experience Q-statements, five Q-statements are constructed to indicate 'constraints' related to individual capabilities and two constructed to indicate individual functioning related 'constraints'.

Table 32: Q-statements indicating individual 'constraints' to capabilities and functionings

'Constraints' to capabilities		**'Constraints' to functionings**	
Qs6	I did not have equal access to information.	Qs1	I did not feel comfortable and safe as a participant.
Qs7	The discussion format allowed for inclusive participation.	Qs10	Negotiations (trade-offs) with other stakeholders were not possible for me.
Qs18	The discussions used language that I did not fully understand.		
Qs5	Some affected parties could not participate for reasons that could have been overcome.		
Qs30	Relevant information from certain groups was ignored.		

4.6.2.1 SOCIAL PERSPECTIVES ON 'CONSTRAINTS' FOR PARTICIPATION CONCERNING INDIVIDUAL CAPABILITIES

'Access to information' is an Arhus Convention principle with implications for equitable participation. Qs6 [I did not have equal access to information] is framed negatively to target those stakeholders who experienced an access related obstacle from the process. A lack of or inequality of access is considered a barrier and constraint to meaningful participation. There were no social perspectives that positively indicated that the process provided and enhanced stakeholders' access to information.

Two factors of the MINE case study [MINE:F1; MINE:F4] articulate that a group of stakeholders did not have equal access to information. Both of these factors articulate challenges at an individual level, as well as from a procedural perspective. MINE:F1[79] expresses inequitable access as a core belief and includes bias in information handling in the secondary belief. This reflects the exclusionary disconnect and associated dissatisfaction from local stakeholders regarding the antagonism between the local knowledge, with those considered 'expert' and scientifically educated already observed in the Report Analysis of the MINE case. This factor also associates this viewpoint as being 'not fair and inadequate financial support was provided for those who needed it'. MINE:F4 associates inequitable access together with the process not attaining to the indirect aim of social learning[80]. If environmental information is not equitably accessible it obstructs the capacity of the process to provide any pedagogical benefit for the stakeholders regarding environmental education.

One factor [MINE:F3] establishes that, for some, 'the discussion format did not provide for inclusive participation'. Interestingly, no social perspectives associated this constraint with language issues [Qs18]. This indicates that despite the inclusivity challenges of the public meetings, the languages used in the public meetings reflected an acceptable medium for participation for all the respondents.

4.6.2.2 SOCIAL PERSPECTIVES ON 'CONSTRAINTS' FOR PARTICIPATION CONCERNING INDIVIDUAL FUNCTIONINGS

GAS:F3 indicates that 'despite [other] challenges, I felt comfortable and safe as a participant, other stakeholders built my confidence and self-esteem'. In direct contrast however GAS:F4 indicates a core belief that 'I did not feel comfortable and safe as a participant, stakeholder's interactions did not promote a sense of accountability and I found it difficult to build trust among the different participants'. The association between feeling comfortable and safe in the meeting and notions of accountability and trust is an association shared in other social perspectives, both within the GAS case positively [GAS:F3; GAS:F5], and within the GAS case negatively [GAS:F4; GAS:F6]. This is also exhibited in other cases [REDZ:F4][81].

The polarisation of the positively framed [GAS:F3; GAS:F5] and negatively framed factors [GAS:F4; GAS:F6], within the same case, is an interesting insight into the conditions provided by the meeting atmosphere to provide equitable participation. From these social perspectives, there are two groups of people who feel prominently comfortable and two groups who feel considerably uncomfortable. On closer investigation into the factors that negatively framed this procedural provision, GAS:F4 associates this deficiency with other key capability aspects of procedural

[79] [MINE:F1] 'I did not have equal access to information …the process did not allow for inclusive participation, relevant information from certain groups was ignored and expert knowledge was valued more highly than local knowledge…'
[80] [MINE:F4] 'I did not learn new things about environmental problems society is facing and did not have equal access to information'.
[81] [REDZ:F4] 'I did not find it easy to build trust among the different participants during the process...'

exclusion, exclusion of those less able to articulate their opinion, limited opportunities for expression of concerns and values and that some meetings were controlled by stakeholders with higher education.

4.6.3 *METHOD 4 RESULTS: CAPABILITY 'CONSTRAINTS' TO THE INDIVIDUAL'S PARTICIPATION EXPERIENCE*

Figure 22 below presents an amoeba chart that indicates the average responses for each case study to the Likert statements indicating constraints to the participation experience and contrasts each case distribution with the aggregate distribution for all the EIAs.

Figure 22: Mean responses to nine participation experience Likert statements

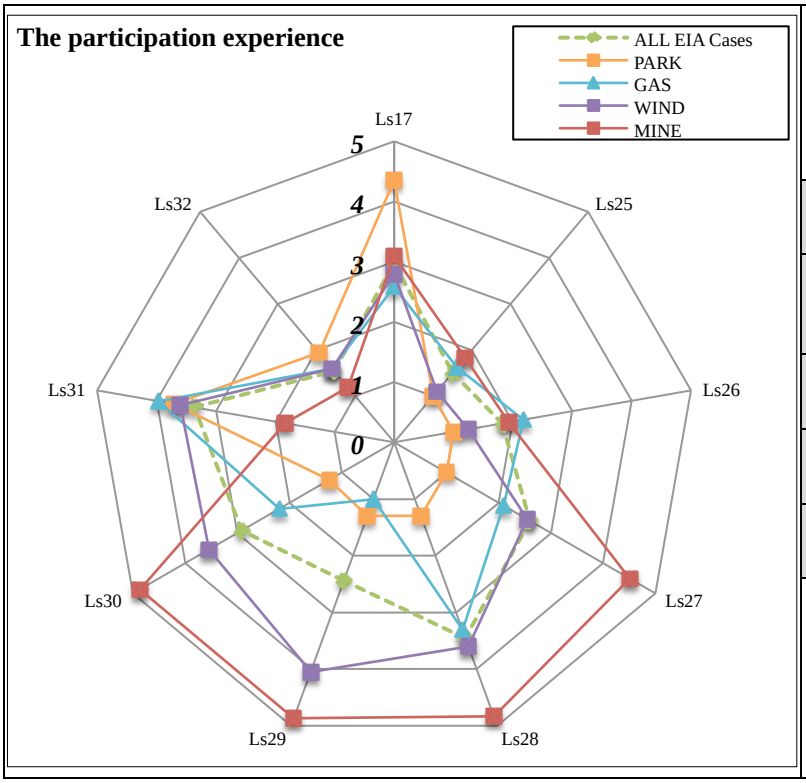


Chart Key		
	Ls17	The process provided opportunities where I could collaborate with other stakeholders
	Ls25	My participation was not allowed in the formal decision making process
0 'Unsure' Case MEAN	Ls26	I felt bullied into accepting a development that was already going ahead
1 'Rarely' Case MEAN	Ls27	I was manipulated into thinking that my opinions count towards decision making
2 'Occasionally' Case MEAN	Ls28	Meetings are just to rubber-stamp public (my) approval
4 'Fairly Often' Case MEAN	Ls29	There was no assurance that my views would be listened to
5 'Always' Case MEAN	Ls30	The public participation did not allow for negotiation with the developer
	Ls31	The public participation was a top-down process but allowed for negotiation with the developer
	Ls32	I shared planning and decision making responsibilities with the developer

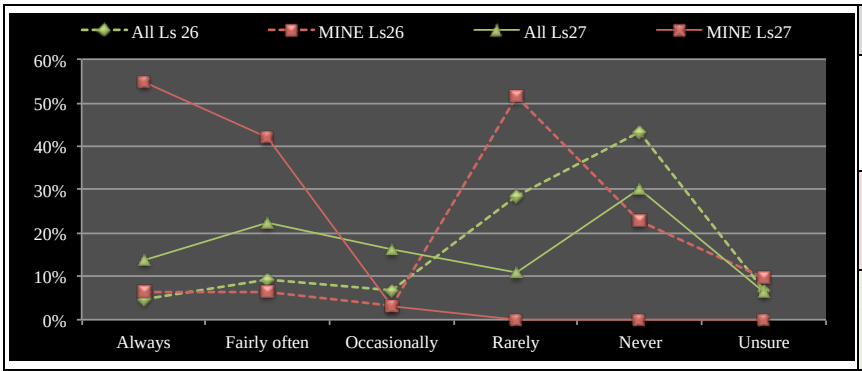
The EA procedure should provide meaningful opportunities for participation. The type and level of involvement demonstrated in the Likert responses discussed in this section indicate that the processes constrained citizen influence, power and ability to influence the outcomes of the environmental assessments. There is a significant evaluative difference between the individual's opportunity and ability to participate and the exogenous characteristics of the participation process. The case and aggregate responses to Ls26, Ls27, Ls28, Ls29, Ls30, Ls31 and Ls32 bring the nature of participation into question. Section 3.4.5 and Figure 7 (p. 101) describes how citizen power in participation is included in the Survey using evaluative Likert scales through the operationalization of Arnstein's and Choguill's ladders of participation. Powerless aspects implied in the lowest ladder

rungs proposed by Choguill are largely discounted in the Likert responses. The following section will elaborate how the Likert responses highlight participation experiences which have characteristics indicating varying degrees of citizen power in participation. The responses indicate Choguill-type aspects of 'informing' and 'diplomacy' and Arnstein-type aspects of 'manipulation', 'therapy', 'consultation', and 'placation'.

The aggregate responses for statements indicating aspects of the participation experience present a significantly wide range. At face value, the amoeba diagram indicates that the MINE and the WIND cases included aspects of participation that the stakeholders of those cases were very unhappy with. There are similarities in mean experience across the cases for Statements Ls25, Ls26, Ls31 and 32. However for Ls27, Ls28, Ls29 and Ls30 the cases have a wide range of differing average experience. The responses of 'Never' and 'Rarely' to Ls25 [My participation was not allowed in the formal decision making process] indicate that, in general, stakeholders were not excluded from participating in the process. This corroborates the generally positive responses to Ls6 regarding 'opportunity'.

Figure 23 below presents a comparison of the response distributions to Statements Ls26 and Ls27 for MINE and contrasts the MINE distribution with the aggregate distribution for all the EIAs.

Figure 23: Comparing the MINE response distributions to Ls26 and Ls27 with All EIAs



Correlation relationships of response distributions	p-value	Sig (norm)
Correlation	(MWT)	
MINE Ls27 & O3Cs Ls27		
MWT effect r: 0.17 (3%)	3.52E-09	YES
MINE Ls26 & O3Cs Ls26		
MWT effect r: 0.69 (48%)	3.1E-14	NO
Case Correlation	(WSRT)	
MINE Ls26 & Ls27:		
WSRT effect r: 0.90 (81%)	1.65E-06	YES
SRCC: 0.01		
All cases Correlation	(WSRT)	
All Ls26 & All Ls27:		
WSRT effect r: 0.88 (77%)	1.4E-05	YES
SRCC: 0.44		

DESCRIPTION of Variance (Alpha 0.05)

Groups	*All EIA Responses*		*PARK*		*GAS*		*WIND*		*MINE*		**MEAN of cases**	**RANGE of cases**
	Count	Variance	Count	Variance	Count	Variance	Count	Variance	Count	Variance		
Ls26	120	1.40	17	0.00	55	1.56	18	0.71	27	1.23	**0.98**	**1.56**
Ls27	121	2.21	17	0.00	53	1.42	18	1.29	30	0.33	**1.05**	**2.21**

Figure 23 above demonstrates that Statement Ls26[82] has a bimodal distribution in the aggregate data indicating that about 10% of the stakeholders felt bullied 'Fairly Often'. A further 30% claim they experienced bullying 'Rarely'. This indicates an unacceptable participation atmosphere where over a third of respondents claim to have experienced varying degrees of bullying. The PARK responses present a unanimous agreement that there were never any cases of bullying or manipulation in that case. In the other cases however there is a wide distribution of experience and variance in response. The MINE case illustrated in Figure 23 above indicates that manipulative aspects were perceived to be involved in the public participation. In contrast with the high 'Rarely' peak for the

[82] Ls26 [I felt bullied into accepting a development that was already going ahead]

responses to bullying [Ls26] in the MINE, the responses to Ls27[83] indicate 55% of MINE stakeholders perceived the process to have manipulated their input 'Always' and '42% 'Fairly Often'. The distribution of the MINE responses to Ls26 and Ls27 compare with the aggregate responses as an outlier to present a case where instances of perceived of manipulation significantly exceeded those of the other cases.

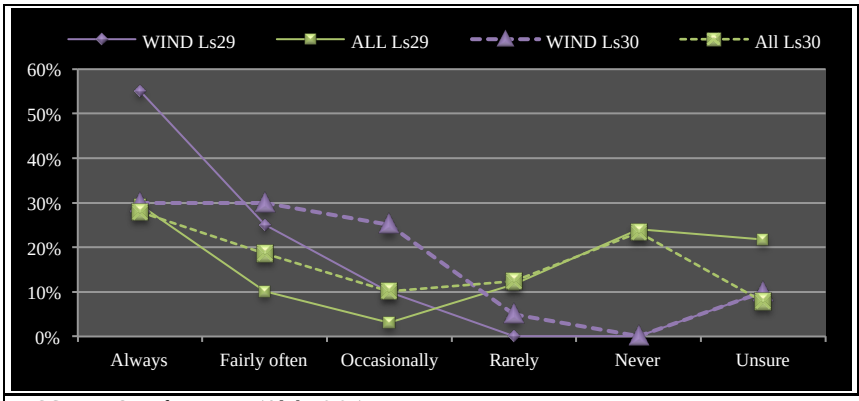
'Manipulation' is an important concept for participation as it has implications for evaluating the tokenism of stakeholder actions that can be used to pacify a population without providing them real influence in decision making. It fits well with the evaluation of stakeholder capabilities and functionings. It highlights realized experiences and the achievement of those opportunities. Token participation actions, in manipulative forms, can be used as strategic tools for limiting citizen power without the overt and legally objectionable actions such as bullying [Ls26] or exclusion [Ls25].

The disingenuousness associated with non-bullying manipulation creates token actions that could pass for 'participation' when considered from a superficial analysis or 'tick-box' approach. Yet it remains deficient in terms of meaningful and genuine opportunities for a stakeholder to contribute towards the decision making. In the South African practice, the widely used term 'stakeholder engagement', as opposed to 'public participation', more closely aligns with the characteristics of such a process. Token participation actions are indicated by Statement Ls28[84]. The mode of 'Always' and 'Fairly Often' in the aggregate data suggest that the stakeholders perceived meetings to 'rubber stamp their approval' of the development. This consensus can be seen to corroborate the responses for Statement Ls27[85] which indicates that coercive and manipulative aspects were perceived to be involved in the public participation.

Information feedback is a critical aspect of participatory decision making and a noted obstacle to the realisation of the Aarhus Convention participation practice principles (Hartley and Wood, 2005). Figure 24 below presents a comparison of the response distributions to Statements Ls29[86] and Ls30[87] for the WIND case and contrasts the WIND distribution with the aggregate distribution for all the EIAs. The bimodal distribution of Statement Ls29 [There was no assurance that my views would be listened to] in the aggregate data reflects agreement, disagreement as well as uncertainty about the outcomes of the stakeholders' inputs into the processes. The aggregate mode shows that the many respondents believed Statement Ls29[88] to be true 'Always' in the aggregate data. This assertion of information feedback adequacy is however contradicted by the 31 (24%) respondents who believe it to have 'Never' occurred.

[83] Ls27 [I was manipulated into thinking that my opinions count towards decision making]
[84] Ls28 [Meetings are just to rubber-stamp public (my) approval]
[85] Ls27 [I was manipulated into thinking that my opinions count towards decision making]
[86] Ls29 [There was no assurance that my views would be listened to]
[87] Ls30 [The public participation did not allow for negotiation with the developer]
[88] Ls29 [There was no assurance that my views would be listened to]

Figure 24: Comparing the WIND response distributions to Ls29 and 30 with All EIAs



Correlation relationships of response distributions	p-value	Sig (norm)
Correlation WIND Ls29 & O3Cs Ls29 MWT effect r: 0.27 (7%)	(MWT) 0.03	YES
WIND Ls30 & O3Cs Ls30 MWT effect r: 0.57 (32%)	3.5E-05	YES
Case Correlation WIND Ls29 & Ls30: WSRT effect r: 0.90 (81%) **SRCC: 0.42**	(WSRT) 1E-04	YES
All cases Correlation All Ls29 & All Ls30: WSRT effect r: 0.88 (77%) **SRCC: 0.81**	(WSRT) 0.00	YES

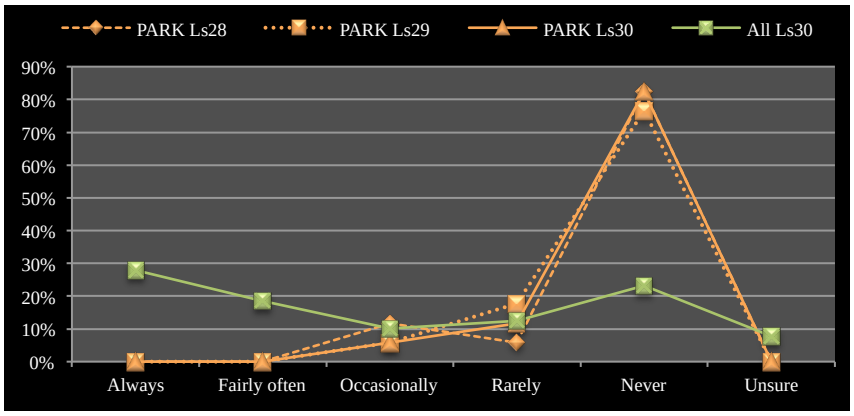
DESCRIPTION of Variance (Alpha 0.05)

Groups	*All EIA Responses*		*PARK*		*GAS*		*WIND*		*MINE*		**MEAN of cases**	**RANGE of cases**
	Count	Variance	Count	Variance	Count	Variance	Count	Variance	Count	Variance		
Ls29	101	3.03	17	0.35	34	0.83	17	0.51	30	0.12	**0.97**	**2.91**
Ls30	119	2.55	17	0.32	52	1.75	18	0.88	30	0.12	**1.12**	**2.43**

The polarization of the distribution suggests that in certain cases assurances were given and in others they were not. This suggests that there is a significant difference in the experiences of certain stakeholders that are possibly case related. In the GAS and MINE cases, the majority of respondents believed Statement Ls29 to be true 'Always', with twice the percentage of respondents indicating that 'There was no assurance that my views would be listened to' than in the aggregate data.

Figure 25below presents a comparison of the PARK responses to Ls28, Ls29 and Ls30 and contrasts the PARK distributions with the aggregate distribution for all the EIAs to Ls30.

Figure 25: Comparing the PARK response distributions to Ls28, Ls29 and Ls30 with All EIAs



Relationships	p-value	Sig (norm)
Case Correlation PARK Ls28 & Ls29: WSRT effect r: 0.93 (86%) **SRCC:0.10**	(WSRT) 0.00	YES
PARK Ls28 & Ls30: WSRT effect r: 0.93 (86%) **SRCC: 0.26**	9.8E-05	YES
PARK Ls29 & Ls30: WSRT effect r: 0.92 (84%) **SRCC: 0.52**	0.00	YES
Case Correlation All Ls29 & Ls30: WSRT effect r: 0.88 (77%) **SRCC: 0.81**	(WSRT) 0.00	YES

DESCRIPTION of Variance (Alpha 0.05)

Groups	*All EIA Responses*		*PARK*		*GAS*		*WIND*		*MINE*		**MEAN of cases**	**RANGE of cases**
	Count	Variance	Count	Variance	Count	Variance	Count	Variance	Count	Variance		
Ls28	125	1.68	17	0.47	56	0.98	19	0.25	30	0.14	**0.70**	**1.54**
Ls29	101	3.03	17	0.35	34	0.83	17	0.51	30	0.12	**0.97**	**2.91**
Ls30	119	2.55	17	0.32	52	1.75	18	0.88	30	0.12	**1.12**	**2.43**

Aspects of feedback and negotiation that are relevant for participation tokenism are further elaborated by Statement Ls30[89], and Statement Ls31[90]. The mode of 'Always' in the aggregate

[89] Ls30 [The public participation did not allow for negotiation with the developer]
[90] Ls31 [The public participation was a top-down process but allowed for negotiation]

responses to Statement Ls30, is strongly contrasted with the second highest response category of 'Never'. This reflects a strong polarization in responses and possible differences across the cases or within the cases. Figure 25 above illustrates that in the PARK case, the stakeholder experiences did not have negative or the 'token' type participation experiences that are reflected in the other cases. The satisfaction indicated by their responses to Ls27[91], Ls28[92], Ls29[93], Ls30[94] and Statement Ls31[95] present a case where the PARK stakeholders' ability and opportunity to participate in environmental decision making that affects their life were not undermined by manipulative or token actions in the process. The low variance in responses and high satisfaction indicate a case where meaningful participation has resulted in collaborative decision making that influenced the EIA to incorporate and contribute towards freedom- related project designs that they consider valuable. In contrast, the WIND case trends indicate that the majority of WIND respondents consider the process to have been 'a top-down initiative' but one that experienced degrees of negotiation.

Very few stakeholders agreed with Statement Ls32 [I shared planning and decision making responsibilities with the developer]. The strong positive skew of this Statement across the cases suggests that most stakeholders did not experience this. This reflects the public participation practice in the South Africa where most participation contact is made between the stakeholder and the appointed assessment practitioner where the developer is not necessarily or directly involved in many aspects of the public participation process.

4.7 RELATIONSHIPS BETWEEN INDIVIDUAL CAPABILITIES AND FUNCTIONINGS: CONSIDERING INDIVIDUAL CAPABILITY 'OPPORTUNITY', 'ABILITY' AND 'CONSTRAINT' TYPE OBSERVATIONS

The overall analysis of individual conversion factors requires an evaluation of the relationships between the applied empirical capability probes. The previous three sections have considered the individual's capability 'opportunities', their 'abilities' and their 'constraints' in participation as discrete empirical findings and as they relate to their particular and individual participation experience. This section brings together these three aspects of 'opportunities', their 'abilities' and 'constraint' as they triangulate a fuller and more accurate picture of capability realisation. Enhancement of opportunity and ability related aspects is seen by the CA to be instrumental in contributing towards individuals realising meaningful participation through capability expansion.

[91] Ls27 [I was manipulated into thinking that my opinions count towards decision making]
[92] Ls28 [Meetings are just to rubber-stamp public (my) approval]
[93] Ls29 [There was no assurance that my views would be listened to]
[94] Ls30 [The public participation did not allow for negotiation with the developer]
[95] Ls31 [The public participation was a top-down process but allowed for negotiation]

Likewise, overcoming agreeably unjust obstacles to participation is prioritised and hypothesised to have the same effect.

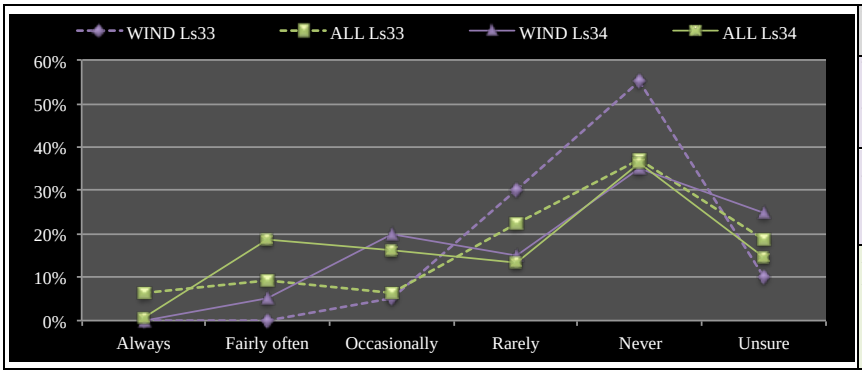
The methodology used by this research explores aspects of stakeholder capabilities and functionings within the context of their participation experience of an environmental assessment. The research therefore employs methodological triangulation in order to identify the salient objects under investigation. The overlap in concepts used in the four methods allows for a degree of inference with potential conclusions that have validity greater than each method can provide on its own. Multiple theories, methods and empirical materials verify capabilities. Triangulation provides a broader understanding of the application of the capabilities approach to environmental assessment public participation, thereby grounding the theory (Olsen, 2004).

Considering the relationship between observations of capability and functionings in the findings is important for the CA. Sen defines agency freedom as "what a person is free to do and achieve in pursuit of whatever goals or values he or she regards as important" (Sen, 1985, p. 203). Three capabilities statements and one functioning statement are selected from the Likert response data to illustrate this. They include the capability Statements Ls6[96], Statement Ls33[97] Statement Ls34[98], and the functioning Statement Ls22[99]. The relationship between the responses to these selected statements is discussed using the available respondent demographic characteristics to highlight variables that influence the feedback of 'opportunities', 'ability' and 'constraint' types on capabilities. Capability Statement Ls6 includes the consideration of realizable stakeholder ability and opportunity for participation. Ls33 indicates empowerment from the process to expand and enhance meaningful participation. Ls34 indicates the constraint of disempowering aspects of the EA process on an individual's functionings. Ls22 indicates the realized opportunity provided by the process for participation in the form of a functioning.

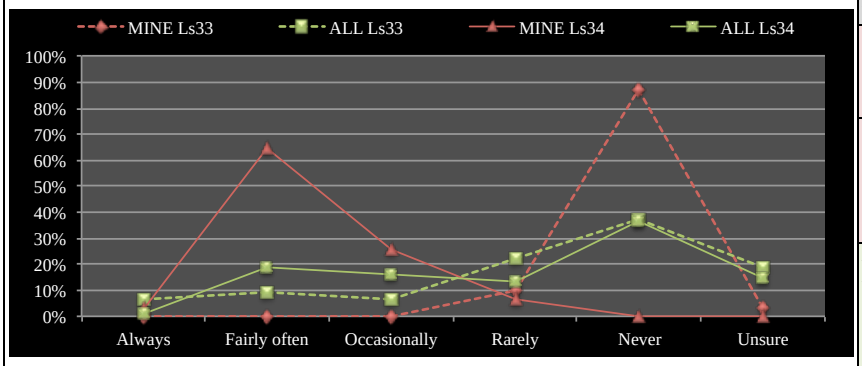
The World Bank (2002, p. 74) considers "empowerment" to be defined as enhancing people's capacities to "influence the state institutions that affect their lives, by strengthening their participation in political processes and local decision-making". This definition reflects the way this research has interpreted Nussbaum's capability of 'control of one's political environment' to include the control of the political process of participating in environmental decision making, as evident in Statement Ls6[100]. Figure 26 below presents a comparison of the response distributions to Statement Ls33 and Ls34 for both the WIND and MINE cases and contrasts each case distribution with the aggregate distribution for all the EIAs.

[96] Ls6 [I am able to participate in environmental decision making that affects my life if I want to].
[97] Ls33 [I was empowered by the process to influence what I consider valuable regarding my future environment].
[98] Ls34 [I was disempowered by the process from influencing what I consider valuable regarding my future environment].
[99] Ls22 [My participation allowed me to influence what I consider valuable regarding my future environment].
[100] Ls6 [I am able to participate in environmental decision making that affects my life if I want to].

Figure 26: Comparing the response distributions to Ls33 and Ls34



Relationships	p-value (< .05)	Sig (norm)
WIND Ls33 & O3Cs Ls33	(MWT)	
MWT effect r: 0.36 (13%)	0.00	YES
WIND Ls34 & O3Cs Ls34		
MWT effect r: 0.69 (48%)	2E-06	YES
Case Correlation	(WSRT)	
WIND Ls33 & WIND Ls34:	5E-06	YES
WSRT effect r: 0.21 (4%)		
SRCC: -0.26		
All cases Correlation	(WSRT)	
All Ls33 & All Ls34:		
WSRT effect r: 0.88 (77%)	0.00	YES
SRCC: -0.62		



Relationships	p-value	Sig
MINE Ls25 & O3Cs Ls25	(MWT)	
MWT effect r: 0.12 (1%)	0.09	NO
MINE Ls34 & O3Cs Ls34		
MWT effect r: 0.70 (49%)	2E-13	YES
Case Correlation	(WSRT)	
MINE Ls34 & Ls25:		
WSRT effect r: 0.50 (25%)	6E-05	YES
SRCC: -0.23		
All cases Correlation	(WSRT)	
All Ls34 & All Ls25:		
WSRT effect r: 0.30 (9%)	08E-06	YES
SRCC: 0.01		

DESCRIPTION of Variance (Alpha 0.05)

Groups	*All EIA Responses*		*PARK*		*GAS*		*WIND*		*MINE*		**MEAN of cases**	**RANGE of cases**
	Count	Variance	Count	Variance	Count	Variance	Count	Variance	Count	Variance		
Ls33	105	1.69	16	0.56	40	1.23	17	0.39	29	0.10	**0.79**	**1.59**
Ls34	110	1.52	16	0.06	47	0.94	14	1.05	30	0.44	**0.80**	**1.46**

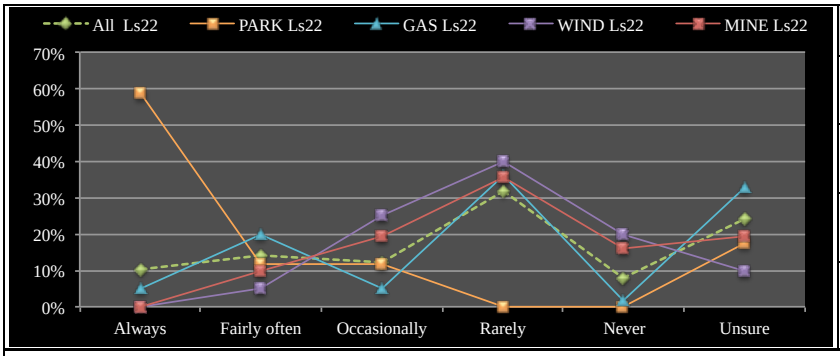
Although the PARK responses indicate that the respondent stakeholders were empowered by the process and that they did not experience disempowerment, in contrast, the WIND responses and MINE responses to Ls33 both displayed in Figure 26 above indicate consensus of 'Never' being empowered by the process. The responses to the provision of empowerment in the processes are limited in the Survey using evaluative Likert scales to the subjectivity of a self-assessed response. They are however important for an evaluation of participatory decision making. It is assumed that the effective provisions of empowerment for meaningful participation include aspects that are observable and perceptible to stakeholders. The response ranges indicated in Figure 26 above present modal responses that generally show that the respondents in the MINE and WIND cases did not experience participation empowerment.

The bimodal and also positively skewed distribution in the responses to Ls34 [I was disempowered by the process from influencing what I consider valuable regarding my future environment] displayed in Figure 26 above presents stakeholder responses that suggest a range of experience concerning being 'disempowered' by the process. The mode suggests that the majority of stakeholders did not feel disempowered by the process, however, 19% of stakeholders felt disempowered 'Fairly Often' and 16% 'Occasionally'. Individual cases vary significantly in the responses to Ls33 and Ls34 as displayed in a contrast of the WIND and MINE cases.

The responses to Ls34 in the MINE case, displayed in Figure 26 above, suggest a strong consensus amongst respondents that stakeholders were both excluded from the decision making as well as disempowered by the process. Almost 90% of the MINE stakeholders also indicate that they were 'Never' empowered by the process. The very low variance in the responses to Ls33 and Ls34 in the MINE case corroborates the consensus. The majority (65%) of the MINE respondents indicated that they felt disempowered by the process. The MINE mode contrasts the aggregate responses considerably and indicates a process that, in the opinion of the respondents actively disempowered many of the stakeholders. It also indicates that although the WIND stakeholders did not feel empowered by the process (Ls33), in contrast with the MINE case responses to Ls34, the absence of disempowerment that WIND stakeholders experienced indicates a more benevolent process in the WIND case than that perceived and experienced by the MINE respondents. Considering the agency implications of empowerment and disempowerment these observations indicate the external constraints to meaningful participation.

Elaborating on achievement and agency Figure 27 below presents a comparison of the response distributions to Statement Ls22 for each EIA case and contrasts each case distribution with the aggregate distribution for all the EIAs. In contrast to the PARK case, the WIND responses to Ls22 [My participation allowed me to influence what I consider valuable regarding my future environment], accentuate the trend observed in the aggregate data for responses to that statement.

Figure 27: Comparing the response distributions to Ls22



Relationships	p-value	Sig (norm)
Correlation WIND Ls22 & O3Cs Ls22 MWT effect r: 0.11 (1%)	(MWT) 0.24	NO
Correlation WIND Ls22 & PARK Ls22 MWT effect r: 0.81 (66%)	(MWT) 5E-06	YES
Correlation WIND Ls22 & GAS Ls22 MWT effect r: 0.29 (8%)	(MWT) 0.01	YES
Correlation WIND Ls22 & MINE Ls22 MWT effect r: 0.11 (1%)	(MWT) 0.24	NO

DESCRIPTION (Alpha 0.05)

Groups	*All EIA Responses*		*PARK*		*GAS*		*WIND*		*MINE*		**MEAN of cases**	**RANGE of cases**
	Count	Variance	Count	Variance	Count	Variance	Count	Variance	Count	Variance		
Ls22	98	1.53	14	0.57	40	1.26	17	0.74	24	0.84	**0.99**	**0.96**

Figure 27 above displays how few WIND responses reflect an agreement that their 'participation allowed them to influence what they consider valuable'. The GAS responses for Statement Ls22 align closely with those of the WIND case. The aggregate experience strongly contrasts the PARK responses for Ls22 in Figure 27 above. For all cases there is an element of uncertainty. Between 18% and 30% of stakeholders in different cases were 'Unsure' if their participation allowed them the opportunity to influence what they consider valuable regarding their future environment.

4.7.1 Relationship between capability Statement Ls6 and functioning Statement Ls22

4.7.1.1 Ls6 and Ls22 relationship description

The relationship between the ability to participate (capability Statement Ls6 [I am able to participate in environmental decision making that affects my life if I want to]) and the utility of participating in the process (functionings Statement Ls22 [My participation allowed me to influence what I consider valuable regarding my future environment]) is a key consideration. Figure 28 below presents a comparison of the modal responses to the capability Statement Ls6 and the functioning Statement Ls22 and contrasts each case mode with the aggregate mode for all the EIAs (left diagram). It also displays the contrasting distributions for the two statements in the aggregate distribution for all the EIAs (right graph).

The responses across the cases to Ls6 [I am able to participate in environmental decision making that affects my life if I want to] indicate a general consensus that respondents 'Occasionally' or 'Fairly Often' experienced this individual capability. The realisation of the stakeholder's objective in participating and acting on this capability 'to influence what [they] consider valuable regarding [their] future environment' does not however align with the opportunity and provision to participate.

Figure 28: Comparing modal responses to capability Statement Ls6 with functioning Statement Ls22

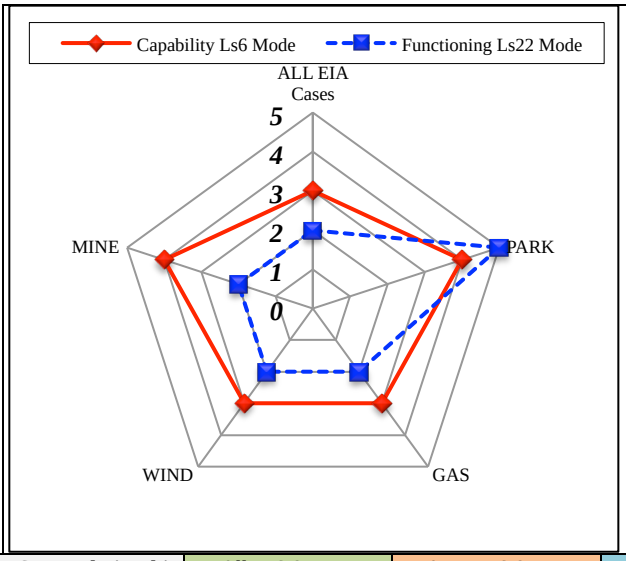
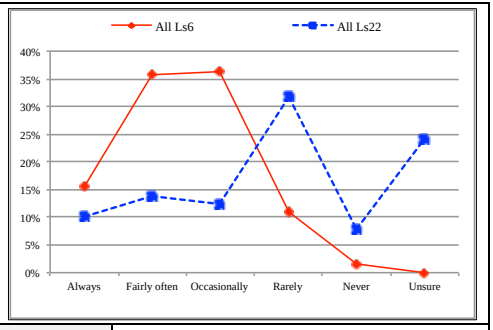


Chart Key		
0 'Unsure' Case MEAN		
1 'Rarely' Case MEAN		
2 'Occasionally' Case MEAN		
4 'Fairly Often' Case MEAN	Ls6	I am able to participate in environmental decision making that affects my life if I want to
5 'Always' Case MEAN	Ls22	My participation allowed me to influence what I consider valuable regarding my future environment



Case Relationship	All Ls6 & Ls22	PARK Ls6 & Ls22	GAS Ls6 & Ls22	WIND Ls6 & Ls22	MINE Ls6 & Ls22
SRCC	**0.28**	**-0.44**	**0.07**	**0.49**	**0.00**
WSRT effect r	0.88 (77%)	0.90 (81%)	0.88 (77%)	0.91 (83%)	0.88 (77%)
WSRT p-value (Sig)	8.55E-07 (YES)	0.00 (YES)	4.8E-12 (YES)	3.81E-05 (YES)	6.59E-07 (YES)

DESCRIPTION of Variance (Alpha 0.05)

Groups	*All EIA Responses*		*PARK*		*GAS*		*WIND*		*MINE*		**MEAN of cases**	**RANGE of cases**
	Count	Variance	Count	Variance	Count	Variance	Count	Variance	Count	Variance		
Ls6	129	0.88	17	0.35	60	0.97	19	0.32	30	0.74	**0.65**	**0.65**
Ls22	98	1.53	14	0.57	40	1.26	17	0.74	24	0.84	**0.99**	**0.96**

Figure 28 above indicates that a correlation of 0.28 (SRCC) exists in the relationship between all the EIA responses to Ls6 and Ls22 indicating a weak relationship between the capability and the functioning. However, the relationship is stronger in two of the cases. Figure 28 illustrates that the PARK and WIND cases indicate stronger relationships between Ls6 and Ls22 than is observed in the other cases. The PARK relationship presents a correlation of -0.44. The WIND case presents a correlation of 0.49. These two cases present contrasting reasons for the observable correlation relationships between Ls6 and Ls22. The PARK case suggests a moderate correlation that indicates that PARK stakeholders' believed that their functioning matched their capability [participation allowed [them] to influence what [they] consider valuable regarding [their] future environment]. Conversely the moderate correlation in the WIND case indicates that stakeholders meagre functioning matched the poor distribution the capability in the sample population as the WIND stakeholders' responses presented a relatively low expectation to the realisation of the capability Ls6 [I am able to participate in environmental decision making that affects my life if I want to]. The functionings observed in the responses to Ls22 of both the PARK and WIND cases is not compared with uniform responses to the ability and opportunity to participate in environmental decision making that affects one's life [Ls6]. The relationship, therefore, needs to be understood contextually and dynamically. The responses in the PARK case are based on expanded capabilities and satisfied functionings. In contrast, the strength of the relationship in the WIND case is based on negative stakeholder experiences that triggered them to downgrade their capability self-assessment. Their experience of that EIA influenced the modal placement of Ls6 to be

only ‘Occasionally’ realized. This contrasts the PARK and MINE cases significantly presenting the WIND case with the most uniform responses (lowest variance) and least positive response distribution to Ls6. Their functionings in that EIA is indicated by the mode of ‘Rarely’ [Ls22] presents a correlation of 0.49, of which 83% of the relationship is attributable to the correlation. This suggests that the self-evaluation of the capability [to participate in environmental decision making that affects my life if I want to] is to a certain extent adaptive. For the PARK case, this observation suggests that the capability indicated by Ls6 is positively adapted and indicative of an increase in the capability based on the realization of the high-performing participation functionings. In contrast, it is negatively adapted in the WIND case, denoting a constriction or reduction in the capability indicated by Ls6.

It is of particular importance to the capabilities approach to consider to what extent certain capabilities are adaptive and what level of objectivity can be attributed to them. It is interesting to consider the reasons why the WIND stakeholders would downgrade their capability in the pattern observed here. Other cases such as the MINE and GAS cases experienced like functionings but did not downgrade their capability accordingly. Likewise, it is interesting to consider why the PARK case respondents place a significantly more positive response range to Ls6. Ls6 is phrased to capture the general ability and opportunity that the stakeholder perceives. It appears that in the PARK and WIND cases, the experience of the EA participation process, have influenced, or possibly correctively calibrated, the response ranges concerning their general participation capability. The MINE and the GAS cases both present many frustrated and dissatisfied stakeholders. However, their responses to Ls6 present similar distributions without the kurtosis observed in the PARK and WIND cases (Figure 13, p. 142). In the WIND case Issues Trail, it is clear that a contributing factor for this difference in the WIND case is an eventual resignation and recognition on the part of the stakeholders considering the limits of influence they can have on the design and outcomes of the project within the practice of public participation.

In their characterization of aspiration and capability adaptation for women in Khayelitsha, Cape Town, Conradie and Robeyns (2013) identify the “sour grapes” phenomenon proposed by Elster (1983, p. 15) and relate their observations to how Sen would characterize adaptive capabilities. Elster’s (1983) ‘sour grapes’ phenomenon suggests that in the face of not being able to achieve a preference or realise an aspiration can cause a person to resignation ultimate rejection of that desire. Applying a similar observation to these cases, Sen (1985) would see the resignation observed in the WIND case Issues Trail to reflect a constriction of aspirations and eventual adaptation of the capability to influence what they consider valuable regarding their future environment. This curtailment is grounded on a reaction to the painful progression of “cognitive dissonance that a person who cannot fulfil her unreachable desires or aspirations feels” (Conradie and Robeyns, 2013, p. 563). There is a chance that a number of the WIND stakeholders came to the process with inappropriately high expectations and the adaptation observed in their responses is not a curtailing of capabilities but

more a learning of what is realistically achievable through participating in EA. Conradie and Robeyns (2013, p. 566) recognise such a phenomenon as "overambitious" capability aspirations. If this is the case the most practicable solution Sen (1985) proposes is to engage in thorough public debate and scrutiny of one's aspirations and preferences. The consideration of over or under adapted capabilities for participation in EA is not the emphasis on preferences but on the capabilities people have reason to value. These are reasoned capabilities. They therefore need to withstand public scrutiny.

The current evidence from South Africa indicates that adaptation has not generally distorted responses to questions about the selection and value of capabilities (Clark, 2002; Clark and Qizilbash, 2002; 2005; Qizilbash and Clark, 2005). The high degree of utility indicated by the PARK case responses where the functionings outscore the expectation set in the capability responses is certainly an outlier regarding stakeholder satisfaction. It conceptually illustrates the potential for public participation to go beyond the mere procedural provisions to a level of involvement and participation where the utility gained by stakeholders is significantly high. It also illustrates that despite the capability challenges produced by participation barriers such as low education, unemployment and the low income of the PARK stakeholder base, very simple but consistent assistance helped them overcome these challenges and contribute to a project with a high level of local community participation, acceptance and buy-in. In contrast to the adaptive downgrading of Ls6 for the WIND case, the high grading of Ls6 for the PARK case indicates stakeholders who have had their capabilities and aspirations widened through participation. Prior to the BA, it may have been considered overambitious of the PARK citizens to assume that they had the ability to "influence what [they] consider valuable regarding [their] future environment". They live in an impoverished informal settlement with severe deprivations and developmental challenges. Nonetheless, the capability approach is concerned with what people are able to achieve and become in light of what they consider valuable. In this case, both the aspirant potential and the degree of realized achievement reflect a marked increase in capability.

4.7.1.2 LS6 AND LS22 RELATIONSHIP FILTERED ACCORDING TO DEMOGRAPHIC CHARACTERISTICS

The source information for the filtered relationships discussed in this section can be found in Appendix 7.7.2 which displays the statistical explorations of each filtered correlation and the validity of each association. When filtering the aggregate data for representation, a higher relationship between Ls6[101] and Ls22[102] is displayed in the responses for the PARK local residents [0.28] than for PARK non-local residents [0.19]. No difference is observed in the relationship between the responses to Ls6 and Ls22 when filtering for variables of 'Residence', 'Representation', 'Age', 'Ethnicity' and

[101] Ls6 [I am able to participate in environmental decision making that affects my life if I want to.]
[102] Ls22 [My participation allowed me to influence what I consider valuable regarding my future environment.]

'Gender' and 'Monthly Income'. These findings for age and gender replicate the findings of Anand *et al.* (2009) who found in their analysis that "any gender differences in capability … relations are primarily quantitative rather than qualitative".

Stakeholder education levels and employment situations present contrasting results in the relationship between Ls6[103] and Ls22[104]. Stakeholders who hold a tertiary education present a range of relationships of between 0.20 and 0.22, for those respondents with Grade 12 or lower this relationship is significantly less at 0.12. On further analysis those within this sub-group of 'under Grade 12', for those with less than Grade 10 the relationship is weaker still at 0.06. Although there is a similar correlation in the responses for employed [0.24] and retired [0.25] respondents, the relationship between Ls6[105] and Ls22[106] is significantly weaker at 0.06 for unemployed respondents. These observations indicate that the relationship indicated by the response distribution displayed in Figure 28 (p. 170) is stronger for those stakeholders with a higher education and for those employed or retired. The relationship for less educated and for unemployed respondents is very weak.

It is often assumed in the EA practice that non-English speakers would be more likely to face obstacles in the process due to the literacy requirements of the reports. These results however indicate that this language constraint can be mitigated. Where the correlations between Ls6[107] and Ls22[108] for English and Afrikaans first language speakers are both very low at 0.17, those speaking isiXhosa present a far stronger relationship of 0.33. This reflects the large proportion of the PARK stakeholders' first language. When the data is filtered to exclude the high functioning outlier of the PARK case, the relationship between Ls6 and Ls22 for Xhosa 'First Language' speakers in all other EIA cases drops to 0.12; only marginally below that of English and Afrikaans speakers.

These explorations of the correlation relationship between Ls6 and Ls22 indicate that ethnicity, education level, employment situation and first language are subtle but potentially independent variables in these cases that affect the relationship between the responses of the two statements. As Ls22 indicates, it is therefore relevant for the practice that the identifiable barriers of ethnicity, education level and employment situation should be considered for mitigation or special participation support.

[103] Ls6 [I am able to participate in environmental decision making that affects my life if I want to.]
[104] Ls22 [My participation allowed me to influence what I consider valuable regarding my future environment.]
[105] Ls6 [I am able to participate in environmental decision making that affects my life if I want to.]
[106] Ls22 [My participation allowed me to influence what I consider valuable regarding my future environment.]
[107] Ls6 [I am able to participate in environmental decision making that affects my life if I want to.]
[108] Ls22 [My participation allowed me to influence what I consider valuable regarding my future environment.]

4.7.2 *RELATIONSHIP BETWEEN CAPABILITY STATEMENT LS33 AND FUNCTIONING STATEMENT LS22*

4.7.2.1 LS33 AND LS22 RELATIONSHIP DESCRIPTION

The relationship between the distribution of responses indicating empowerment from the process and those indicating the utility of participating in the process develops the understanding of how functionings and agency can relate to capabilities. The chart in Figure 29 below presents a comparison of the modal responses to the capability Statement Ls33 and the functioning Statement Ls22 and contrasts each case mode with the aggregate mode for all the EIAs (left diagram). Figure 29 also displays the similarity of the response distributions for the two statements in the aggregate distribution for all the EIAs (right graph).

Figure 29: Comparing modal responses to capability Statement Ls33 with functioning Statement Ls22

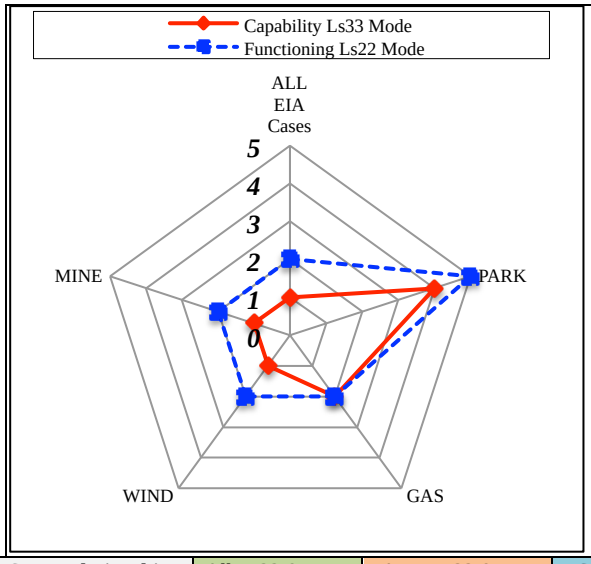
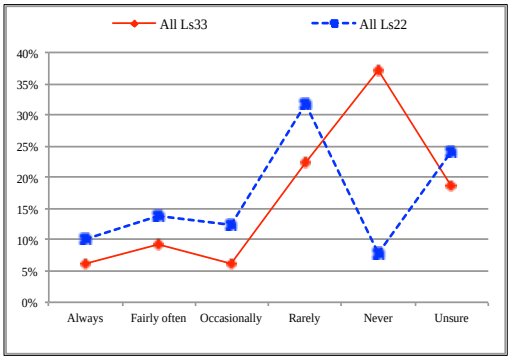


Chart Key		
0 'Unsure'		
1 'Rarely'		
2 'Occasionally'		
4 'Fairly Often'	Ls33	I was empowered by the process to influence what I consider valuable regarding my future environment.
5 'Always'	Ls22	My participation allowed me to influence what I consider valuable regarding my future environment.



Case Relationship	All Ls33 & Ls22	PARK Ls33 & Ls22	GAS Ls33 & Ls22	WIND Ls33 & Ls22	MINE Ls33 & Ls22
SRCC	**0.53**	**-0.11**	**0.46**	**-0.16**	**0.19**
WSRT effect r	0.88 (77%)	0.89 (79%)	0.89 (79%)	0.90 (81%)	0.96 (92%)
WSRT p-value (Sig)	2.74E-11 (YES)	0.00 (YES)	1.08E-08 (YES)	0.00 (YES)	1.27E-07 (YES)

DESCRIPTION of Variance (Alpha 0.05)

Groups	*All EIA Responses*		*PARK*		*GAS*		*WIND*		*MINE*		**MEAN of cases**	**RANGE of cases**
	Count	Variance	Count	Variance	Count	Variance	Count	Variance	Count	Variance		
Ls22	98	1.53	14	0.57	40	1.26	17	0.74	24	0.84	**0.99**	**0.96**
Ls33	105	1.69	16	0.56	40	1.23	17	0.39	29	0.10	**0.79**	**1.59**

The close association in the modes of all the cases between the responses to these two statements indicates that the relationship between empowerment (Ls33) and achievement (Ls22) in the responses is worth considering. A correlation (SRCC) of 0.53 exists in the relationship between all the EIA responses to Statement Ls33 and Statement Ls22. This indicates a moderate positive relationship. In light of the variety and quantity of unaccounted for variables that can influence this relationship, this correlation is possibly more significant than it initially suggests. For the PARK, the WIND and the MINE cases, the response modes indicating empowerment do not exceed the modes for the case functionings. For the GAS case, this relationship is exhibited to be stronger than the other

cases with a 0.46 correlation (SRCC). Here the indicated 'Rarely' achieved functionings are similar to the 'Rarely' experienced empowerment. This observation suggests that in the GAS case the minimal support provisions from the process, aligned with the nominal influence on the decision making that stakeholders believed they attained to. Although the statistical relationship is not strong for the PARK case overall response distribution correlation (-0.11 SRCC), the PARK case contrasts the other cases with its high instance of empowerment from the process indicated by a mode of 'Fairly Often' for Ls33, which aligns with the modal functionings of 'Always' for Ls22.

4.7.2.2 Ls6 and Ls22 relationship filtered according to demographic characteristics

The source information for the filtered relationships discussed in this section can be found in Appendix 7.7.2. No significant differences in correlations between Ls22[109] and Ls33[110] were found in the aggregate responses regarding stakeholder variables of 'Residence', 'Age', 'Gender', and 'First Language'. These findings for age and gender replicate the findings of Anand *et al.* (2009) who found in their analysis that "any gender differences in capability … relations are primarily quantitative rather than qualitative".

Responses to Ls22 and Ls33 from stakeholders that indicated they were either 'Black African' or 'Coloured' correlated 0.57 between the statements. 'White' stakeholders indicate a significantly lower relationship of 0.28. As there was no significant ethnicity difference in the relationships between Ls6[111] and Ls22[112] (discussed in Section 4.7.1.2 above) this difference between Ls6 and Ls33 potentially indicates that the 'White' respondent stakeholders felt that the degree of achievement they attained in the process (Ls22) is not as attributable to empowerment from the process as persons from the aforementioned ethnicities indicate. However when the PARK case is removed from the data, the correlation of 'Black African' and 'Coloured' responses to Ls22 and Ls33 is revised to 0.28; the same as 'White' respondents. This relationship is therefore not attributable to ethnicity and only reflects the idiosyncrasy of the ethnic make-up of the high performing PARK case study.

Noteworthy differences in correlations between Ls22 and Ls33 were found in variables of representation, education and employment situation. Stakeholders representing 'Self' in the process exhibit a correlation between Ls22 and Ls33 of 0.45, those representing local business interest, a correlation of 0.53, and those stakeholders representing civil society, 0.58. This evaluation of the responses suggests that the relationship between empowerment and influence on decision making is

[109] Ls22 [My participation allowed me to influence what I consider valuable regarding my future environment.]
[110] Ls33 [I was empowered by the process to influence what I consider valuable.]
[111] Ls6 [I am able to participate in environmental decision making that affects my life if I want to.]
[112] Ls22 [My participation allowed me to influence what I consider valuable regarding my future environment.]

slightly stronger for representatives of stakeholder interests groups than it is for those representing 'Self'. This highlights the need for evaluation focus to consider individual capabilities and functionings as well as those of collective interest groups. The ethical considerations of individual achievement are important for an evaluation that considers autonomy and individual agency. From the epistemological position of a methodological individualist (Sen, 2002), this distinction is important as the limited agency potentially indicated by this weaker correlation for the individual is highlighted. Without Sen's particular and insistent focus on individuals this observation would not be possible.

Figure 30 below illustrates that when filtered according to stakeholder education levels, the responses present contrasting results in the correlations between the response distributions for Ls22[113] and Ls33[114].

Figure 30: Responses distribution correlations between Ls22 and Ls33 indicating filtered differences of perceived achievement of influence in participation for three different stakeholder education categories

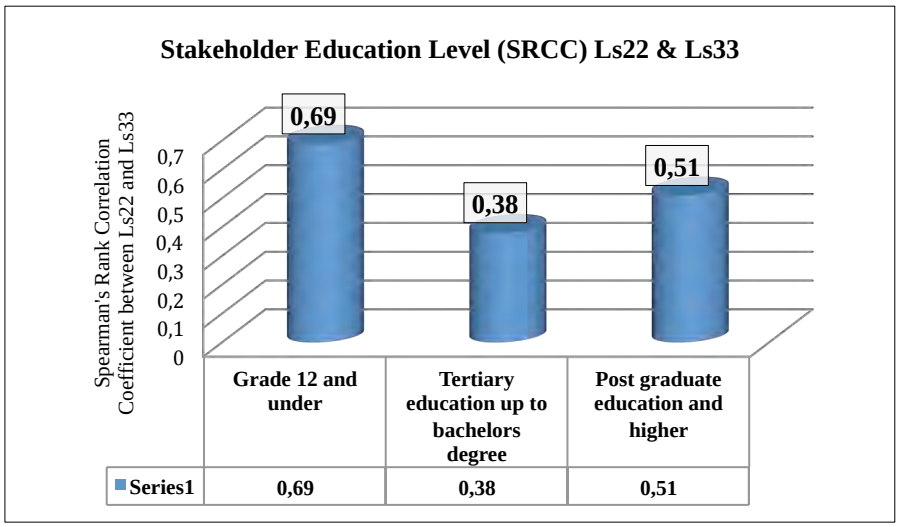


Figure 30 above illustrates that stakeholders who hold a postgraduate education present a relationship of 0.51 between the responses distributions for Ls22 and Ls33. Those with lower than postgraduate, but still tertiary qualifications, present a weaker relationship of 0.38. For those respondents with Grade 12 or lower this relationship is significantly stronger at 0.69. This relationship remains high [0.61] even when excluding the PARK data for this 'Grade 12 or lower' education cohort.

A possible interpretation of this education variable could be that for those who are less educated, the provisions of the process were perceived to be adequately empowering. In the PARK case, this is both subjectively accurate regarding the respondents' perceptions, as well as correct regarding the substantial support provisions of the process. Likewise, the highly educated postgraduates who may not need support also found the level of empowerment adequate. However the

[113] Ls22 [My participation allowed me to influence what I consider valuable regarding my future environment.]
[114] Ls33 [I was empowered by the process to influence what I consider valuable.]

middle group of 'tertiary educated' respondents, present a kind of discontented 'empowerment-no-man's-land' in between these two categories of adequate 'empowerment/support provision' and that of 'no empowerment/support needed'.

Stakeholder employment situations present contrasting results. The relationship between Ls22[115] and Ls33[116] is strongest for employed respondents. Unemployed respondent stakeholders present a relationship of 0.15, employed stakeholders 0.53 and retired stakeholders 0.45. The instrumental relationship between the empowerment provisions of the process and achievement indicated for less educated persons as well as monthly income (discussed in Section 4.7.1.2 above) contrasts and is not replicated in the categories of employment responses for the relationship between Ls22 and Ls33. Those unemployed respondent stakeholders indicate a very weak relationship between their levels of achievement and the provisions of empowerment from the process. Respondents with a mean monthly income of over R8000 per month present a correlation in the aggregate data of 0.28 for the relationship between Ls22 and Ls33. This relationship is much stronger at 0.69 for or those earning between R2000 and R8000 per month and for those earning less than R2000 per month the relationship drops to 0.47. This indicates that there is a differentiation in the perceived relationship between the stakeholders' achievement and the empowerment of the process that can be loosely associated with monthly income. As there is a 71% correlation between respondent stakeholder education level and their mean monthly income this pattern is not surprising in light of the previous findings regarding education. It is not possible to distinguish between the influence that education and income have on the relationship between Ls22 and Ls33. This is possibly due to the interconnectedness of the two variables and possibly also due to the small sample size.

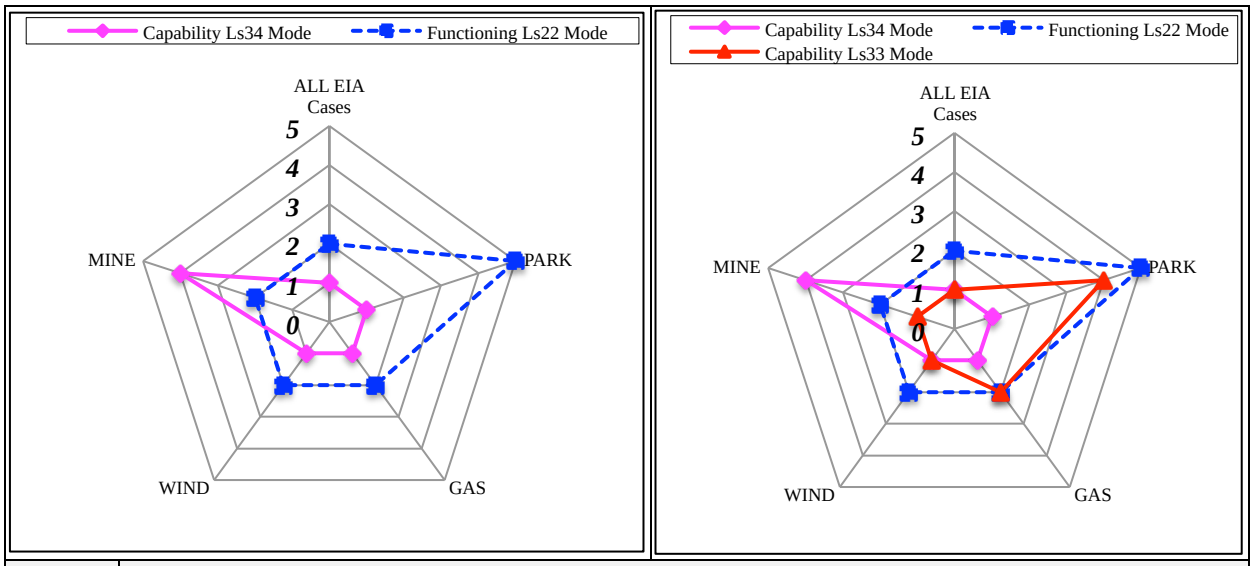
4.7.3 Relationship between capability Statements Ls34 and Ls34 and functioning Statement Ls22

The relationship between disempowerment [Ls34][117] and the utility of participating in the process [Ls22][118] is another useful consideration. In order to corroborate responses to the 'empowerment' statement [Ls33], Statement [Ls34], is phrased negatively to try and capture stakeholder responses that show instances where the process might actively disempower or negate the potentials of the stakeholders assumed opportunities. Figure 31 below presents a comparison of the modal responses to the capability Statement Ls34 and the functioning Statement Ls22 and contrasts each case mode with the aggregate mode for all the EIAs (left chart). It also displays a comparison of the modal responses to the capability Statement Ls33, capability Statement Ls34 and the functioning

[115] Ls22 [My participation allowed me to influence what I consider valuable regarding my future environment.]
[116] Ls33 [I was empowered by the process to influence what I consider valuable.]
[117] Ls34 [I was disempowered by the process from influencing what I consider valuable regarding my future environment.]
[118] Ls22 [My participation allowed me to influence what I consider valuable regarding my future environment.]

Statement Ls22 and contrasts each case mode with the aggregate mode for all the EIAs (right chart). The cases present an interesting relationship between 'disempowerment' Ls34[119] and achievement [Ls22[120]]. The Figure 31 below displays an inverse relationship in the cases to the modal responses indicating 'empowerment' [Ls33[121]] and realized opportunity [Ls22[122]] previously discussed (Section 4.7.2). There is a significant and moderately strong negative correlation between Ls33 and Ls34 of -0.62 in the aggregate EIA responses. When the empowerment [Ls33] and disempowerment [Ls34] capabilities responses are considered against the functioning variable of achievement [Ls22], the evaluation of the cases presented in Figure 31 below shows an inverse relationship in the data. This relationship highlights the realisation of capabilities opportunity and ability in the higher performing cases. It also highlights not just the lack of realisation of opportunity and ability in the lower performing cases but also what stakeholders perceived to be active disempowerment.

Figure 31: Comparing modal responses to capability Statements Ls33, Ls34 with functioning Statement Ls22



Ls22	My participation allowed me to influence what I consider valuable regarding my future environment
Ls34	I was disempowered by the process from influencing what I consider valuable regarding my future environment
Ls33	I was empowered by the process to influence what I consider valuable regarding my future environment

Case Relationship	All Ls34 & Ls22	PARK Ls34 & Ls22	GAS Ls34 & Ls22	WIND Ls34 & Ls22	MINE Ls34 & Ls22
SRCC	**-0.30**	**-0.52**	**0.10**	**0.17**	**-0.33**
WSRT effect r	0.88 (77%)	0.97 (94%)	0.89 (79%)	0.89 (79%)	0.91 (83%)
WSRT p-value (Sig)	0.00 (YES)	0.00 (YES)	6.14E-10 (YES)	0.00 (YES)	3.58E-07 (YES)
Case Relationship	All Ls33 & Ls34	PARK Ls33 & Ls34	GAS Ls33 & Ls34	WIND Ls33 & Ls34	MINE Ls33 & Ls34
SRCC	**-0.62**	**-0.09**	**-0.30**	**-0.26**	**0.00**
WSRT effect r	0.88 (77%)	0.89 (79%)	0.89 (79%)	0.90 (81%)	0.96 (92%)
WSRT p-value (Sig)	0.13 (NO)	0.00 (YES)	1.08E-08 (YES)	0.00 (YES)	1.27E-07 (YES)

DESCRIPTION of Variance (Alpha 0.05)

Groups	*All EIA Responses*		*PARK*		*GAS*		*WIND*		*MINE*		**MEAN of cases**	**RANGE of cases**
	Count	Variance	Count	Variance	Count	Variance	Count	Variance	Count	Variance		
Ls22	98	1.53	14	0.57	40	1.26	17	0.74	24	0.84	**0.99**	**0.96**
Ls33	105	1.69	16	0.56	40	1.23	17	0.39	29	0.10	**0.79**	**1.59**
Ls34	110	1.52	16	0.06	47	0.94	14	1.05	30	0.44	**0.80**	**1.46**

[121] Ls33 [I was empowered by the process to influence what I consider valuable.]
[122] Ls22 [My participation allowed me to influence what I consider valuable regarding my future environment.]

Figure 31 above indicates that a correlation of -0.30 is demonstrated in the relationship between all the EIA responses to Ls22 and Ls34 indicating a significant although weak negative relationship. There is a moderately strong negative correlation of -0.52 between the PARK responses to Ls22 and Ls33. It indicates a closer association between the responses and implies that the stakeholders of that case did not experience disempowering aspects from the process. In contrast, Figure 31 above indicates the MINE case presents a negative correlation of -0.33 which reflects the case's mean responses indicating being disempowered 'Fairly Often' by the process [Ls34], and a mean of 'Rarely' being able to influence what the stakeholders' considered valuable. When considered together with Ls33, where the MINE case mean indicates 'Never' being empowered by the process, this correlation highlights the difficulties the stakeholders faced in influencing the MINE decision making. Not only were they not empowered by the process, but there is also a general consensus of disempowerment. This suggests that the procedure itself was a constraint to realising the capability of participating in EA for those MINE stakeholders.

Stakeholders experienced the processes in a multiplicity of ways. If the goal of development can be taken to be the augmentation of individual's capability 'opportunity', 'ability' and the overcoming of 'constraints', the instrumental relationships between these three aspects within the participation setting have shown to provide a complex, individual and context-sensitive evaluation of participation. Stakeholders that considered themselves able to influence the decision making in ways valuable to them, associate this functioning with the realisation of their ability and the maximising of opportunity. They also associate this with an expansion in their capabilities to achieve such meaningful participation. For some, this included overcoming historical social constraints.

The most exhibited constraint displayed in the results however is not demonstrated in the overcoming of identifiable stakeholder barriers but is exemplified in the many experiences of disempowerment from the process. The participation processes in such instances were not experienced as a means to enhance the freedoms of participation but as a constraint to participation. Due to the interrelated nature of opportunities, abilities and constraints, the realisation of the participation capabilities of individuals in those cases were curtailed.

4.8 RANKING FUNCTIONAL CAPABILITIES

The results presented so far have focused on capabilities and functionings with an emphasis on the contextual understanding of each case study. This section shifts the analysis to the identification of certain highly valued capabilities. A particular challenge to generalizability is not just the acceptability of a value but the weighting or emphasis that can be attributed to a value for decision making purposes. Recognised value has implications for significance attribution in assessment and

evaluation. Method 1 and Method 3 are designed to identify and calibrate a degree of relative ranking and emphasis to identified functional capabilities. As this involves comparisons across cases and methods what is proposed here is preliminary and open to further testing.

4.8.1 METHOD 1 RESULTS: EMPHASIS RANKING OF FUNCTIONAL CAPABILITIES IN THE EA REPORTS

Table 33 below presents a summative aggregation of the Report Analysis results for all the cases based on the ratings attributed to reported emphasis.

The EA reports articulate aspects of capabilities with differing degrees of emphasis and relevance to both the processes of development and public participation. This description of the results focuses only on those functional capabilities articulated 'in detail' in the reports and which can be considered to be important or valuable based on the emphasis placed on the capability. A table displaying the breakdown of the scoring for each functional capability in each case is available in Appendix 7.1.9[123].

The rating of 18 for 'Living in a clean and natural environment' in the central column of reflects the emphasis that, in the five cases, that functional capability was highly emphasised. When considered across the cases, the articulations of 'functional capabilities' in the reports present interesting trends in emphases in the EA reports for commonly described capabilities. As can be expected, there are some similarities in placement regarding the higher ranked functional capabilities of 'Jobs', 'Personal safety and security', 'Housing and shelter', 'Education' and 'Good health'. Capabilities are articulated and framed in the cases with decision making ends in mind. To a certain extent, these are cognisant of the impacts of that development on the receiving environment as well as on a stakeholder's individual capabilities. Where Clark's (2003) empirical work placed 'Living in a clean and natural environment' twenty-second on his list, the emphasis in the EA reports places it first. This emphasis is observed in the reports in how stakeholders articulate their viewpoints and impact concerns. Stakeholders consistently advocate for the decision making process to integrate their value of both the natural environment, as well as the value of living in a clean environment. The cases indicate that despite such motivations the WIND, MINE and REDZ environmental assessments catered for their 'health' considerations but very little attention was paid to a sense of place and other subjective aspects of the 'natural' environment.

[123] Appendix 7.1.8 presents a tabular summary of the results of 'Part B' of the discourse analysis. For a more elaborate reporting of the results with a methodological break down of each case study, please refer to Appendices 7.1.3 to 7.1.7.

Table 33: Emphases of 'functional capabilities' in the reports All Cases

Rank in Reports	Never mentioned / Superficially mentioned / Occasionally mentioned / *Discussed in detail* — **Emphases of 'functional capabilities' in all EA reports** (List ranked according to emphasis aggregate from all cases and ranked according to highest capability emphasis in any one case)	Aggregate report emphasis	Clark's Rank		Clark's Rank	**Clark's 'functional capabilities'** (Clark, 2003, p. 186) (List ranked according to normative evaluation)
1	Living in a clean and natural environment	18	22		1	Jobs
2	Jobs	17	1		2	Access to clean water and sanitation
3	Capacity to think, reason and make choices	16	13		3	Housing and shelter
t4	Personal safety and physical security	15	5		4	Family and friends
t4	Income and wealth	15	18		5	Personal safety and physical security
t4	Electricity	15	28		6	An education
t4	Participate in political activities that affect your life	15	38		7	Happiness
t8	Free time/recreation	13	29		8	Good health
t8	The right to own personal property	13	35		9	Sleep and rest
t10	Access to clean water and sanitation	12	2		10	Fuel for cooking and heating
t10	Housing and shelter	12	3		11	Access to family planning
t10	An education	12	6		12	Exercise
t10	Good health	12	8		13	Capacity to think, reason and make choices
t14	Family and friends	11	4		14	Sexual satisfaction
t14	Fuel for cooking and heating	11	10		15	Basic clothing
t14	Land and cattle	11	21		16	Fashionable clothing
t14	Determination, motivation, self-reliance	11	37		17	Freedom for self-determination
18	(All weather) roads	10	25		18	Income and wealth
t19	Playing sport	9	27		19	Consumer durable and luxury goods
t19	Transportation	9	24		20	Self-respect
21	Sleep and rest	8	9		21	Land and cattle
22	Happiness	7	7		22	Living in a clean and natural environment
22	Exercise	7	12		23	Coca-Cola (or other fizzy drink)
22	Freedom for self-determination	7	17		24	Transportation
22	Having children	7	30		25	(All weather) roads
22	Living long	7	33		26	Watching sport
26	Access to family planning	6	11		27	Playing sport
26	Watching sport	6	26		28	Electricity
26	Equal opportunities for personal advancement	6	36		29	Free time/recreation
n/a	Sexual satisfaction	5	14		30	Having children
n/a	Basic clothing	5	15		31	Watching TV/going to the cinema
n/a	Fashionable clothing	5	16		32	Drinking alcohol
n/a	Consumer durable and luxury goods	5	19		33	Living long
n/a	Self-respect	5	20		34	Smoking cigarettes
n/a	Coca-Cola (or other fizzy drink)	5	23		35	The right to own personal property
n/a	Watching TV/going to the cinema	5	31		36	Equal opportunities for personal advancement
n/a	Drinking alcohol	5	32		37	Determination, motivation, self-reliance
n/a	Smoking cigarettes	5	34		38	Participate in political activities that affect your life

Great emphasis is also given in the reports to the 'Capacity to think, reason and make choices', which reflects the challenges of problem solving and reading of reports that stakeholders are faced with in the EA process. Another significant contrast is seen in the high placement in the reports of both the fCs, 'Participate in political activities that affect your life' and 'Property rights'. Both of these fCs are central to *locus standi* which is a concept that is important for the public participation process and the profession of EA as a whole. In this way the top-of-mind considerations that influence the identification of capabilities in this research contrast the day-to-day considerations that would have been in the minds of the respondents to Clark's (2003) survey and in doing so highlight the

ranking of values that stakeholders develop through participating in an EA. This does not imply that the stakeholders retain the ranking. It only illustrates the ordering at the completion of the participation process when the survey was conducted.

4.8.2 METHOD 3 RESULTS: RELATIVE VALUE OF FUNCTIONAL CAPABILITIES IN THE Q-SORTS

In order to demonstrate the value of certain prioritised capabilities a Q-method principle component analysis identified correlations in respondent stakeholders' Q-sorts. The Q-method focused on identified functional capabilities that respondents considered most valuable. Each case presented three factors of highly valued capabilities. These can be viewed in Appendix 7.4. It is important for the reader to have in mind that Q-method factors represent diversity and variance in opinion. This methodology serves a useful purpose of representing different perspectives. Inference of shared values across the cases is also useful for indications of potential generalizability and therefore a combination of variance and consensus is used in this evaluation. It is important to also have in mind that there may be only one or two stakeholders who align with a particular factor and thereby making it a minority view. As the CA attempts to provide a voice to marginalised perspectives, the balance this provides in the evaluation for the inclusion of disparate views on capabilities is important. Within the cases, there were variations of consensus regarding highly valued functional capabilities that were identified as statistically significant in the Factor Analysis, as shown in Table 34 below.

Table 34: Number of 'consensus' highly-valued fCs across all three Factors within each Case Study

statistically significant at p-value <0.05				
PARK	GAS	WIND	MINE	REDZ
8	2	5	11	13

The purpose of ranking priority functional capabilities is not to exclude the lower ranked capabilities. The selection of 30 functional capabilities for the respondents presents a limitation to the methodology that disallows exclusion. As respondents are sorting a pre-defined list of capabilities it is not possible to comparatively rank those low ranked capabilities with ones not included in the Q-sort. Further research with an extended or open-ended list could prove beneficial in this regard. The focus of the discussion and analysis however emphasises the relative ranking of the higher valued capabilities. This is done not in absolute terms, but as a relative ranking of that capability compared with the other 29 fCs. The degree of generalizability that such a relative ranking can have is limited as it is drawn from case study research[124].

[124] The ranking of the functional capabilities in Table 37 is based on the aggregate ranking of that fC within its constituent factors and as relative to the 30 other functional capabilities that the respondents placed in the Q-sorting frame. Therefore fCs that were placed regularly in the lower columns 6, 5, 4, 3, 2 and 1 are considered less valuable than those that were placed in the higher columns of 7, 8, 9 and 10. This is a relative ranking and therefore the evaluation is

The usefulness of identifying highly valued capabilities is however promising. As the list is informed by Nussbaum's (2003) and Clark's (2003) lists, the relative ranking is a testing of existing normative and empirical work which are themselves presented as open-ended. Further, the similarities and differences in value-placements in the factors reflect coherent viewpoints of shared value. Understanding variance in valued capabilities enables dialogue about norms and values to go beyond social relativism and adaptive preferences. It presents substance to choose from and alternatives to agree on or disagree with. Importantly, it presents a normatively framed structure within which claims can be made regarding agreeably unjust arrangements from the viewpoint of realized individual participatory situations. It is this frame that an EAP can have in mind when considering the integration of human well-being and other human development considerations into the evaluation of a project. Further, it is also a frame of reference with which to consider how a development might impact upon the capabilities of the affected persons. In both of these aspects, an understanding of the functional capabilities of stakeholders provides a means to evaluate the need and desirability of a project that takes cognisance of the human development context within which a proposed development may exist.

Table 35 below presents the aggregate of all the cases priority functional capabilities ranked by stakeholders in the adapted ranking Q-method. Establishing the value ranking that stakeholders have regarding their lived environment is important in order to appreciate their reasons for valuing certain capabilities over others. In the centre column of Table 35 the fCs that are shaded darker green represent functional capabilities that were ranked very highly (in columns 7, 8, 9 or 10) as consensus and as priority fCs within a case. This indicates that all the factors of that particular case study, considering their contextual realities, agreed with that functional capability being ranked as a priority capability. The lighter shaded green indicates fCs that were ranked highly (in columns 7, 8, 9 or 10) within one or more factors but not as a consensus factor across all the factors for that case study.

only based on association with the 29 other fCs. The reader needs to appreciate that if the list included 50 functional capabilities, which was beyond the practical limits of the survey design, fCs such as fC14 [Having children], or fC18 [Land and Cattle] for example, may be evaluated as more valuable than others on a longer list. They are therefore not considered to be 'not valuable'. They are only relatively less valuable than those placed in a position indicating a higher priority value.

Table 35: Priority Functional Capabilities ranked by stakeholders in adapted Q-method

'fC' code	Q-method Ranking	**All EIAs aggregate 'Priority Functional Capabilities'**[125] (Q-method consensus rank)
fC1	Priority **1**	Job
fC2	Priority **2**	Capacity to think, reason and make choices
fC21	Priority **3**	An education
fC6	Priority **4**	Access to clean water and sanitation
fC4	Priority **5**	Electricity
fC5	Priority **6**	To participate in political activities that affect your life
fC12	Priority **8**	Personal safety and physical security
fC10	Priority **9**	Determination, motivation, self-reliance
fC29	Priority **10**	Equal opportunities for personal advancement
fC25	Priority **11**	Internet and Email connectivity
fC13	Priority **12**	Basic clothing
fC28	Priority **13**	Living in a clean and natural environment
fC22	Priority **14**	Happiness
fC27	Priority **15**	Good health
fC8	High Value **16**	Income and wealth
fC7	High Value **17**	Family and friends
fC11	High Value **18**	Housing and shelter
fC30	High Value **19**	Freedom for self-determination
fC15	High Value **20**	Transportation
fC23	High Value **21**	Self-respect
fC9	High Value **22**	Free time/recreation
fC26	High Value **23**	Sleep and rest
fC24	High Value **24**	The right to own personal property
fC20	High Value **25**	Sexual satisfaction
fC3	≥ 26	Access to family planning
fC14	≥ 26	Having children
fC16	≥ 26	Exercise
fC17	≥ 26	Fashionable clothing
fC18	≥ 26	Land and Cattle
fC19	≥ 26	Playing/watching sport

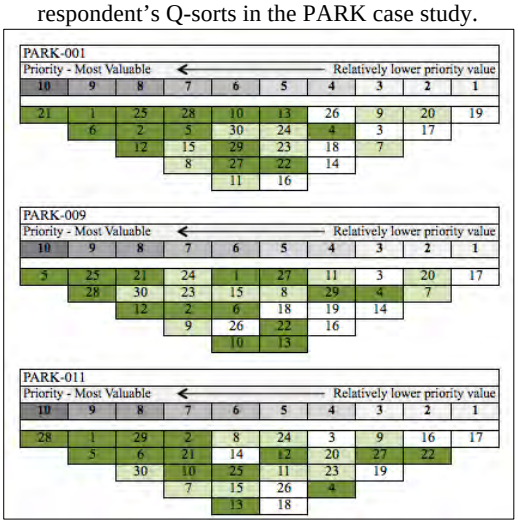
Table Key

'fC' with High Rank [7-10] in aggregate ranking and statistically significant consensus across the case Factors of at least one case.

'fC' with high rank [7-10] in 1 or more Factors in a case but not as a consensus placement across the Factors for that case study.

'fC' without a high rank in any Factors in any cases.

Three examples of the priority placement of fCs from respondent's Q-sorts in the PARK case study.



In these three PARK Q-sorts, the functional capabilities fC21, fC2, fC5 and fC28 are consistently placed very highly (in columns 7, 8, 9 or 10).

These three PARK Q-sorts are 'defining' sorts of contrasting social perspectives on the priority value of fCs which makes the relatively consistent placement of fC21, fC2, fC5 and fC28 significant.

In the PARK case there are seven fCs that are consensus not highly valued fC3, fC14, fC16, fC17, fC18, fC19 and fC26.

Table 35 above presents 15 functional capabilities that are ranked highly (placed in columns 7, 8, 9 and 10) and as consensus capabilities within at least one case. Although not indicated in Table 35, fC21 [education] and fC2 [Capacity to think, reason and make choices] were the only fCs to be both consensus and highly ranked in four of the five cases. On aggregate placing, fC1 [Job] was consistently placed as the priority functional capability in the Q-sorts of all the cases. The right column of Table 35 displays three examples from the PARK case study of the prioritised placement of fCs from respondent's Q-sorts to assist in understanding the table ranking. In these three PARK Q-sorts, the functional capabilities fC21, fC2, fC5 and fC28 are consistently placed very highly (in columns 7, 8, 9 or 10). These three PARK Q-sorts are 'defining' sorts of contrasting social perspectives on the priority value of fCs. This makes the relatively consistent placement of fC21, fC2, fC5 and fC28 significant. In the PARK case, there are seven fCs that are consensus not highly valued

[125] The case specific and factor rankings of functional capabilities are in Appendix 7.4.

fC3, fC14, fC16, fC17, fC18, fC19 and fC26. However when the Q-sorts from the other cases are included, fC26 [Sleep and rest] is no longer excluded from the highly valued fCs. Those fCs not observed to be priority fCs on aggregate are thereby reduced to just six functional capabilities namely: fC3, fC14, fC16, fC17, fC18 and fC19.

The following section discusses selected functional capabilities displayed in Table 35 above as they contrast the rankings established in in the Report Analysis (Table 33) and the normative ranking of Clark's list.

4.8.3 COMPARATIVE RANKINGS OF HIGHLY VALUED FUNCTIONAL CAPABILITIES

Method 3 targets priority ends 'which are pursued with a drive'. **Error! Reference source not found.** below integrates a comparative ranking of functional capabilities comparing the hierarchies of Clark (2003), with both the EA Reports Analysis and the ranking Q-method. The evaluation focuses on general trends. These trends are based on aggregate and baseline information and therefore need to be understood as such. There are individual cases that qualify and even contradict the general trends observed.

Error! Reference source not found. is colour coded to draw the reader's eye to the functional capabilities that are generally ranked highly. Clark's list is split into a grey scale of four categories in **Error! Reference source not found.** with the top ten of his list marked darkest. The emphasis given to functional capabilities in the EA reports (Method 1C) is ranked in **Error! Reference source not found.** in four graded shades of grey scale with the darkest grey indicating functional capabilities emphasised in the EA reports and discussed in detail. The Q-method ranking of priority functional capabilities (Method 3) is indicated in **Error! Reference source not found.** by two shades of green. They have been split into two categories of functional capabilities that were a) priority ranked in columns 7-10 and which were consensus statements within the Factors of that EA, and b) ranked 7-10 in 1 or more Factors in one or more cases. The comparative ranking of functional capabilities considers both the positional ranking of a particular capability in terms of its empirically observed ranking, as well as the validation of that ranking by another source. This triangulation is considered important for this research in its role of validating the normative ranking of capabilities. Four fCs considered to be particularly relevant to participatory environmental assessment (fC2, fC5, fC25 and fC28) are pre-flagged in distinguishing colour in order to display the array of difference in placement of each in the results of Methods 1 and 3 when compared with Clark's list.

Table 31: Stakeholder priority functional capabilities compared with report emphases

	Clark's 'functional capabilities' (Clark, 2003, p. 186) (List ranked according to normative evaluation - adapted from Table 3 p. 41)
1	Jobs
2	Access to clean water and sanitation
3	Housing and shelter
4	Family and friends
5	Personal safety and physical security
6	An education
7	Happiness
8	Good health
9	Sleep and rest
10	Fuel for cooking and heating
11	Access to family planning
12	Exercise
13	Capacity to think, reason and make choices
14	Sexual satisfaction
15	Basic clothing
16	Fashionable clothing
17	Freedom for self-determination
18	Income and wealth
19	Consumer durable and luxury goods
20	Self-respect
21	Land and cattle
22	Living in a clean and natural environment
23	Coca-Cola (or other fizzy drink)
24	Transportation
25	(All weather) roads
26	Watching sport
27	Playing sport
28	Electricity
29	Free time/recreation
30	Having children
31	Watching TV/going to the cinema
32	Drinking alcohol
33	Living long
34	Smoking cigarettes
35	The right to own personal property
36	Equal opportunities for personal advancement
37	Determination, motivation, self-reliance
38	Participate in political activities that affect your life

Ranking score	Clark's ranking	Report ranking	**Articulations of 'functional capabilities' in EA reports (Method 1C - Report Analysis)** (Adapted from Table 28 p. 149)
18	22	1	Living in a clean and natural environment
17	1	2	Jobs
16	13	3	Capacity to think, reason and make choices
15	5	t4	Personal safety and physical security
15	18	t4	Income and wealth
15	28	t4	Electricity
15	38	t4	Participate in political activities that affect your life
13	29	t8	Free time/recreation
13	35	t8	The right to own personal property
12	2	t10	Access to clean water and sanitation
12	3	t10	Housing and shelter
12	6	t10	An education
12	8	t10	Good health
11	4	t14	Family and friends
11	10	t14	Fuel for cooking and heating
11	21	t14	Land and cattle
11	37	t14	Determination, motivation, self-reliance
10	25	18	(All weather) roads
9	27	t19	Playing sport
9	24	t19	Transportation
8	9	21	Sleep and rest
7	7	22	Happiness
7	12	22	Exercise
7	17	22	Freedom for self-determination
7	30	22	Having children
7	33	22	Living long
6	11	26	Access to family planning
6	26	26	Watching sport
6	36	26	Equal opportunities for personal advancement
5	14	n/a	Sexual satisfaction
5	15	n/a	Basic clothing
5	16	n/a	Fashionable clothing
5	19	n/a	Consumer durable and luxury goods
5	20	n/a	Self-respect
5	23	n/a	Coca-Cola (or other fizzy drink)
5	31	n/a	Watching TV/going to the cinema
5	32	n/a	Drinking alcohol
5	34	n/a	Smoking cigarettes

'fC' code	Clark's ranking	Report ranking	Q ranking	**All EIAs aggregate (Method 3 - 'Priority Functional Capabilities')** (Q-method consensus rank – adapted from Table 30 p. 152)
fC1	1	2	1	Jobs
fC2	13	3	2	Capacity to think, reason and make choices
fC21	6	t10	3	An education
fC6	2	t10	4	Access to clean water and sanitation
fC4	28	t4	5	Electricity
fC5	38	t4	6	Participate in political activities that affect your life
fC9	29	t8	7	Free time/recreation
fC12	5	t4	8	Personal safety and physical security
fC10	37	t14	9	Determination, motivation, self-reliance
fC29	36	26	10	Equal opportunities for personal advancement
fC25	n/a	n/a	11	Internet and Email connectivity
fC13	15	n/a	12	Basic clothing
fC28	22	1	13	Living in a clean and natural environment
fC22	7	t22	14	Happiness
fC27	8	t10	15	Good health
fC8	18	t4	16	Income and wealth
fC7	4	t14	17	Family and friends
fC11	3	t10	18	Housing and shelter
fC29	17	t22	19	Freedom for self-determination
fC15	24	t19	20	Transportation
fC23	20	n/a	21	Self-respect
fC9	29	t8	22	Free time/recreation
fC26	9	21	23	Sleep and rest
fC24	35	t8	24	The right to own personal property
fC20	14	n/a	25	Sexual satisfaction

Table Key

Clark's List (2003)	EA Report Emphasis	All EIAs priority fCs
Clark Top Ten rank	Discussed in detail	High Rank [7-10] in aggregate and statistically significant consensus across the case Factors of at least one case.
Clark 11-20 rank	Occasionally mentioned	
Clark 21-30 rank	Superficially mentioned	
Clark 31-38 rank	Never mentioned	fC with high rank [7-10] in 1 or more Factors in a case.

pre-flagged participatory functional capabilities:	
fC2	Capacity to think, reason and make choices
fC5	To participate in political activities that affect your life
fC28	Living in a clean and natural environment
fC25	Internet and Email connectivity

A tabular summary of the following discussion that presents the variations of column placements for each of the capabilities according to the methods employed in this research can be found in Appendix 7.4.7. The discussion does not intend to explain the full array of differences and similarities in the placements of the three lists in **Error! Reference source not found.**. This section only focuses on the pre-flagged participatory functional capabilities and those considered particularly important for the assessment practitioner to consider.

The first general observation of **Error! Reference source not found.** is the significant difference between the fCs that stakeholders identified as 'priority' capabilities and those of Clark's list. As Clark's list reflects what 'ordinary people' in South Africa normatively rank, the ranking reflects the top-of-mind association that stakeholders may have which the practitioner may need to consider. It is an aggregate list based on empirical research in South Africa that claims to reflect the limited generalizability of Nussbaum's list while incorporating contextually nuanced values and priorities of South Africans.

Table 36: Priority ranking of fC5 in Q-method compared with Clark (2003)

			'Priority Functional Capabilities' (Method 3)					
'fC' statement	**Clark (2003)**	**Report Analysis**	PARK	GAS	WIND	MINE	REDZ	Aggregate EIA
'Participate in political activities that affect your life'	**38th**	**t4th**	**3rd**	**8th**	**6th**	**3rd**	**3rd**	**6th**

These placements presented in Table 36 clearly indicate that the context of environmental assessment is a trigger for individuals to adjust their prioritisation of the relative placement when value-ranking capabilities. These results indicate that the EA participation impresses on the stakeholder a re-ordering of the functionality of particular capabilities relative to the political activity of participation demands. This indicates that in the communities Clark worked in, the respondents did not have a similar trigger that would foreground such rights related functional capabilities. Perhaps this is due to a lack of previous engagement or inclusion in EA participation processes. This finding supports the observation that public participation in EA can have a strong normative outcome in generating a greater awareness of, and value for, civic engagement responsibilities and the requisite functional capabilities associated with meaningful participation in decision making.

The second general observation of **Error! Reference source not found.** (p.186) is that stakeholders may re-order their priorities through participating in the EA process. In work similar to that of Clark, Conradie and Robeyns (2013) explored South African women's aspirations in light of their capabilities. The capability of "living with other species and with nature", corresponding to Ls5 in this research, was not seen as a priority with respondents laughing at the researcher for proposing that it might be (Conradie and Robeyns, 2013, p. 572). Similarly, on Clark's list, 'Living in a clean and natural environment' is ranked 22nd on aggregate. If this corroborated low placement can be taken as an

applicable baseline, in contrast, after participating in EA the stakeholders rank fC28 [Living in a clean and natural environment] as 13th attributing to it an aggregate priority rank and a statistically significant consensus across the case factors. This change is more pronounced for fC5 [Participate in political activities that affect your life] that gets foregrounded through the process of participation from 38th on Clark's list to the aggregate of the sixth most valuable fC. The 'Capacity to think, reason and make choices' and 'Property rights' are likewise also both promoted to higher value capabilities. It is possible that the environmental decision making imperatives presented to the stakeholders through the participation process assist in this regard. It reflects an increased awareness and a value for capabilities such 'Living in a clean and natural environment' or 'Property rights' that may be taken for granted until their realisation or associated freedoms become threatened.

A third general observation of **Error! Reference source not found.** (p.186) is that is it important for the EAP to recognise that the social learning process for the stakeholders is dynamic and challenging. Each stakeholder interprets a project proposal through the values of their worldview and experience. A development proposal and its associated environmental impacts confront an existing hierarchy of capability priorities. The values displayed in the Report Analysis contrast significantly with Clark's list. The Report Analysis reflects the practice values. The reports reflect a balance of the values of the stakeholders, the EAP, the specialists and those of the consent authority. They include EAP's ranking of capabilities as they relate to what they consider important for that project. The ranking is also strongly influenced by the authorization requirements and the placement of fCs such as 'jobs' could have less to do with the EAP's value system and more to do with highlighting what motivates for the granting of an environmental authorization. However, the Report Analysis ranking more closely aligns with the aggregate and reflective Priority Functional Capabilities of stakeholders than it does Clark's list. Considering the value orderings by the stakeholders in the ranking Q-method, it is not necessarily problematic that the EAP's values do not at first align with a significantly different value system of a particular population. In practice, some stakeholders may hold a value system that places greater emphasis on ecological aspects than that of the EAP. As displayed in **Error! Reference source not found.**, the social learning process of EA can instil a more robust value for 'living in a clean and natural the environment' and the value of environmental assessment as a participatory process.

However, the contrast between the Report Analysis hierarchy and Clark's list cautions that the way the participation process should be run, the way that reports are written and the consideration of the human development and well-being aspects of a proposed project, need to first understand local capabilities and values before embarking on the appropriate next steps in the environmental assessment. For example, nine of the 'Top 10' in Clark's list are all reflected as Priority Functional Capabilities. This indicates that although the stakeholders have accommodated a re-ordering and inclusion of EA and participation appropriate capability values through the EA processes, they have

not necessarily neglected or compromised their existing values. Rather they have incorporated those fCs together with their baseline normative functional capabilities. This is highlighted by the placement of fC28 at 13th on the aggregate response to Priority Functional Capabilities in contrast with the supremacy the Report Analysis affords it. Whether this is a temporary reordering or one that becomes more entrenched for the stakeholders it is not possible to say. It does however highlight the applicability of Clark's list to EA as a useful baseline for identification of functional capabilities.

The fourth and final general observation of **Error! Reference source not found.** (p.186) regards a novel functional capability. This research offers the fC of 'Internet and Email connectivity' as an identifiable capability for the practice of EA. It is regularly highly prioritised by respondents as instrumental for participating in the EA process. With the rapid increase of South Africans owning mobile telephones and being connected to the Internet in recent years, there is great potential for the instrumental use of Internet and email connectivity as a capability for participation. However this ranking of 'Internet and Email connectivity' simultaneously highlights the significance of this functional capability as a barrier to participation for those without such access.

The findings reflect a difference in normative ranking between the practice of EA and the everyday capabilities people value. They also indicate adaptation and prioritisation of certain capabilities as a result of engaging with the participation process. These changes are an important part of the participation process and a critical consideration for the assessment practitioner. The findings indicate a significant consensus within environmental assessment public participation regarding the identification of valued capabilities as well as in the value ranking of those capabilities. When compared with Clark's (2003) list, the large variety of valued capabilities in the cases indicates the need for the approach to public participation to be flexible enough to cope with variance in value as well as being adaptable to the inclusion of new and emerging capabilities.

Despite the limited ability for generalisation that this research provides, the findings indicate that the CA has noteworthy applicability to both the South African context as well as the practice of EA. It presents useful concepts and ways of conceptualising the critical conditions necessary for capability sufficiency in participation. It further provides the practitioner with a useful means to conceptualise the human development and well-being considerations that are important to the stakeholders. It is offered as a useful foundation for the integration challenges that relate to human development and well-being when evaluating the strong sustainability considerations of a development proposal.

4.9 CONCLUSION: RESULTS ANALYSIS

The analysis explored the case study findings generated by the four methods employed in this research from both an empirical and a normative perspective. Evaluation of empirical findings considered how three types of capability queries guided the analysis of the results to consider aspects relating to the individual's capability 'opportunity', 'ability' and 'obstacles' to participation in environmental assessment. Evaluation of the normative considerations in capabilities application to environmental assessment considered the ranking of certain highly valued capabilities over others. The values of the respondent stakeholders indicated in the results suggest aspects of Nussbaum's (2003) and Clark's (2003) lists as appropriate entry points for considering the human development and well-being considerations of stakeholder capabilities and functionings. These findings indicate that there is substantial potential for the assessment practitioner and the competent authority (consent regulator) to consider capability related insights for decision making.

5 CHAPTER FIVE: THEORETICAL DEVELOPMENT

In the field of environmental assessment, this research aims to advance the integration of human development and well-being considerations in participatory environmental decision making through the development of a capabilities approach to the practice. This section elaborates how the research develops an evaluative framework for 'meaningful' public participation in environmental assessment that better considers the capabilities of stakeholders. The chapter reflects on the emergent findings in the cases and the discussion contributes towards the praxis of environmental assessment through the theoretical development of a capabilities approach to environmental assessment. In doing so, the research targets the enhanced integration of *ex-ante* contemplation of capabilities.

The research focuses on what rudiments of the capabilities approach can serviceably be applied to aid in the evaluation of public participation and the suitable consideration of human development and well-being in environmental assessment. Though a case study approach and using multiple methods, the research appraises the public participation processes of the cases from the standpoint of selected stakeholders and presents the findings of how stakeholders' engagements and capabilities denote an evaluation of their participation experience. The research focuses on their abilities, their opportunities, and barriers to their participation. It also considers the stakeholders' value ranking of certain functional capabilities in the environmental assessments. Contemplating the salient issues in the case studies, the research presents the nascent theoretical development of a capabilities approach to environmental assessment. The proposed theoretical framework is grounded upon a focus on individual's participation capabilities as well as a broader consideration of capabilities for the practice that focus on an expansion of freedoms to choose the kinds of environmental futures that can reasonably be considered valuable and sustainable. This necessitates an inclusive and integrated understanding of the social, economic and ecological aspects of what comprises the environment.

5.1 A THEORETICAL FRAMEWORK FOR A CAPABILITIES APPROACH TO ENVIRONMENTAL ASSESSMENT PUBLIC PARTICIPATION

This theoretical framework aims to provide a conceptual tool for environmental practitioners and decision makers through enhancing the decision making considerations of human development and well-being in environmental assessment through developing a capabilities approach to the practice. In doing so, it underscores the effectiveness and fairness obligations of public participation and highlights the addition of apposite societal concerns in environmental assessment. The literature review established the principled foundation for consilience between the two disciplines of the CA and EA. The consilience of the two disciplines is elaborated in this chapter through the demonstration

of how ‘capability thresholds’ and ‘capability ceilings’ can be useful concepts for considering stakeholder barriers to meaningful participation. This section diagrammatically and conceptually tethers the theoretical discussion to the experience of a stakeholder involved in an environmental assessment. The presentation of the theoretical framework at this point demonstrates how the theoretical development has emerged through the process of reflecting on the research findings. The intention is to propose an emergent theoretical framework that is grounded in both the empirical and deductive findings that chart a way forward for the practice, and further the research agenda.

Focussing on capabilities emphasizes the view people hold of what they consider to be a decent living. The definition of ‘environmental’ concerns is broadened in this regard, to include the social, economic and ecological (biophysical) setting rather than a narrowly described biophysical conception. The consilience of the capabilities approach with environmental assessment affords a more appropriate schematic for the practice. Firstly, it assists in scoping what the significant issues are. By including capabilities in the scoping concerns, the elimination procedure of what is, or is not considered significant, includes the stakeholder’s articulations of the good in light of affected person’s abilities to live the type of life that they consider valuable. This pertains to both the capabilities of individuals as well as the capabilities of the ecological systems within which they live. This is expounded in the theoretical framework in Section 5.1 as they transmit to the minimally just circumstances for participation and Section 5.2 as they relate to the feedback of decision making on capabilities for environmental choice. Secondly, it offers schema for integrating the socio-economic human development and well-being aspects in the evaluation, assessment and decision making procedures. Through a discussion of integrating capabilities, the practitioner is better equipped to consider the human development and well-being impacts of developments. It becomes clear that the need for the deliberations to be informed by a bottom-up information base requires a participatory foundation. This research recommends that the participatory foundation of a capabilities approach to environmental assessment should comprise decision shaping by stakeholders and decision support for the stakeholders.

5.1.1 CAPABILITY EXPANSION AND PUBLIC PARTICIPATION IN ENVIRONMENTAL ASSESSMENT

The CA is concerned with both means and valued ends. In a fashion similar to Aristotle, both Nussbaum (1992) and Sen (1988, p. 44) have pointed out that, “wealth is evidently not the good we are seeking; for it is merely useful for the sake of something else”. One of the chief reasons that stakeholders choose to be involved in an EIA is because it provides an institutionalised process for them to potentially affect what they consider valuable regarding their future environment. Or at least, they believe the EIA participation process provides them with this prospective opportunity for such instrumental action. Both the public participation procedure and the development itself have a

potential impact on stakeholder capabilities. By this formulation, an ‘unjust’ or ‘unfair’ EIA participation arrangement can be conceived of as one which has characteristics of an inequitable, opportunity and ability to participate. This could be due to various types of constraints on individual capabilities that retard the realisation of their aspired participation ends. Likewise, an ‘unjust’ development creates adverse effects on human well-being and their capabilities in general.

Sen (1999b) holds that development in a certain political arena without development in an associated economic sphere negates the sustained freedoms that could be achieved from the former. Considered from the inverse, if these freedoms are absent the CA considers them as ‘unfreedoms’ with a negative impact on capabilities and freedoms. Within a functioning democracy, the focus on capabilities provides a useful insight into the participation instance because the analysis is grounded in identifying ‘unfreedoms’, for the purpose of their removal or reduction through targeted support. The aim is to contextually identify stakeholder ‘capabilities’ and ‘functionings’ and reflect upon the freedoms that positively enhance individual’s capabilities, or upon ‘unfreedoms’, which constrain participant’s capabilities within the context in which they find themselves.

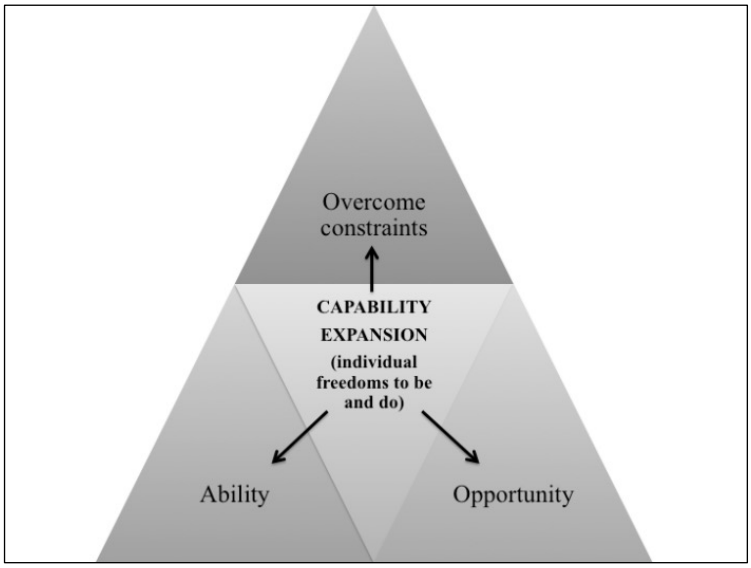
The real value in a set of options is in the best use that can be made of them. In her cogent discussion of the tertiary education system of the United Kingdom, Melanie Walker (2008) identifies that mere access and participation in tertiary education is a significant improvement in the lives of many students, but not sufficient in itself to provide a better life for the recipients. She argues that the quality and type of education they receive is critically important for it to add realistic value. It is this qualitative difference for the individual to make a meaningful use of the opportunities provided for them that the capabilities approach is concerned with. The difference between broader ‘access’ in Walker’s (2008, p. 271) education discussion and ‘meaningful’ tertiary education is conceptualised as a ‘widening’ of capabilities. Wilson-Strydom (2014b) has illustrated that the complexities of access and success in South African higher education are a further illustrative case for this. Her work motivates “the capabilities approach as a particularly productive theoretical approach in the context of university access for promoting more just outcomes, through a specific consideration of student agency and the interaction of this agency with institutional contexts” (Wilson-Strydom, 2014b, p. 143).

Walker’s (2008, p. 271) use of the word ‘meaningful’ as it relates to education within the CA discourse sheds light on what meaningful participation could entail. It implies participation that goes beyond opportunity and access to substantive, personal and realisable outcomes. Applied to EIA, mere notification and registration for participation in EIA do not necessarily lead to ‘meaningful’ participation. Such initial steps ostensibly provide access and opportunity for comment as stipulated by regulatory imperatives. However, regulations and guidelines have no provision for the quantification of this level of ‘meaningfulness’ of participation.

In support of the notion of ‘meaningful’, or ideal participation, it is important to identify just grounds for participation that are sensitive to the diversity of the stakeholders. Most importantly for terms of fair reciprocation, there is also no standard for gauging a stakeholder’s minimum equitable participation. No metric or measure has been proposed to date that would adequately identify the grounds for reasoned identification of this level of what constitutes a reasonable minimally acceptable threshold.

Figure 32 below presents a graphical conceptualization of ‘capability expansion’ as an increase in the individual stakeholder’s capability ‘opportunities’, ‘ability’ and as overcoming ‘constraints’

Figure 32: Conceptualizing ‘capability expansion’: increasing stakeholder ‘opportunities’, ‘ability’ and overcoming ‘constraints’ (after Anand *et al.*, 2007)



Sen (2009) is primarily concerned with capabilities as a metric for equity and justice. Empirically, there are three probes that Anand *et al.* (2007, p. 57) have proposed that assist in asking constructive capabilities questions. They propose that in order to better understand individual capabilities, questions need to be asked of the ‘opportunities’, the ‘ability’ and the ‘constraints’ facing the individual’s capabilities. These three probes are used to illustrate the applied CA to a stakeholder’s public participation experience and they are operationalized in Section 3.3.

The notion of increased freedoms is applied in Figure 32 to indicate that constructive functioning for a stakeholder would necessitate that their constraints are overcome, disabilities are catered for, and that adequate opportunity is provided. They also imply that the decisions that are made in the EA should not negatively impact capabilities in these types of ways.

Fennell (2013) identifies Nussbaum (2011a, p. 23) terms of ‘combined capabilities’ and ‘internal capabilities’ in order to discuss an individual’s capabilities. ‘Combined capabilities’ are the substantial freedoms that reflect the sum of opportunities an individual has for choice and action in

her particular political, social and economic situation. These can be analysed largely through a discussion of the 'opportunities' and 'constraints' to stakeholder capabilities. 'Internal capabilities' are those characteristics of a person such as personality traits, intellectual and emotional capacities, internalised learning, skills of perception and movement. These can be analysed largely through a discussion of the 'ability' considerations of stakeholder capabilities.

Anand *et al.* (2007) have suggested that operationalizing the CA requires focusing on a specific topic, future risks, and constraints to capabilities. *Ex-ante* participatory decision making considers *inter alia*, equity, fairness and cumulative environmental effects. Inherent to the public participation process is the consideration of future risks and constraints faced by the stakeholders and the environment. It follows therefore that operationalizing concepts of future risks and constraints to capabilities can logically fit within a conventional approach to, and the general characteristics of, a public participation process. Impact assessment considers the impact of a development on the environment. However, this theoretical framework posits that a stakeholder is not only concerned about the impact the development will have on the environment but also, and perhaps to a greater extent, the impact it will have on their capabilities. This includes their broader as well as more personal considerations of well-being.

5.1.2 APPLYING CAPABILITY 'THRESHOLDS', 'CEILINGS' AND 'SUFFICIENCY' TO EIA PUBLIC PARTICIPATION

A potential means of applying the capabilities approach to environmental assessment is afforded by the use of Nussbaum's (2011a) concept of capability 'thresholds' and Holland's (2008) concept of capability 'ceilings'. This section outlines how capability thresholds and ceilings can be applied to public participation through targeting the normative practice expectation of effective and equitable opportunity in participation. Capability expansion is presented here within the Nussbaumian formulation of 'thresholds' and 'ceilings' for consideration of stakeholders' meaningful procedural and substantive expectations within an EIA.

In order to facilitate the practice workability of 'ceilings' and 'thresholds', the concept of 'capability sufficiency' is proposed. This is intended as supplementary to practice specifications such as 'effective and equitable' participation, as required, for example, in the NEMA. It does not negate the value of 'equitable' or 'effective' participation for the practice. Rather it is proposed as a more practicable evaluative and normative expectation. This research proposes the use of three categories of central capabilities established by Nielsen and Axelsen (2016, p. 5) in order to practically consider "capability sufficiency" as a participation goal for the participation minimum threshold: they distinguish between the following three categories:

a) **Biological and physical needs**.
The *needs* to ensure biological and physical well-being.
For example: nourishment, water, health, clean air, shelter, reproduction, sexual fulfilment and physical security.

b) **Fundamental interests of a human agent**.
Capabilities that relate to *individual autonomy* – forming and reforming valuable ends.
For example: rational reflection, imagination, critical thinking, normative evaluation, functional and technical skills, understanding the implications of choices and actions for one's life, working, having the emotional capacities to feel an appropriate range of emotions, and feeling an emotional attachment with other human beings.

c) **Fundamental interests of a social being**.
Capabilities needed for *pursuing one's valuable ends within a community*.
For example: political freedoms such as the freedom to vote, the freedom of assembly and association, the freedom from discrimination and oppression, and other freedoms such as access to some form of market in which one can trade on fair terms with others, the capability of enjoying sufficiently high social status, not being dominated by others [adapted from Nielsen and Axelsen (2016, p. 5)].

These three categories are not necessarily a hierarchy of needs but can be a useful way of considering the functional capabilities that stakeholders value and require for participation 'capability sufficiency'. Neither are the examples intended as an exhaustive list of capabilities that make up the good human life (Nielsen and Axelsen, 2016). They do however provide the practitioner with three categories and exemplars of what a capabilities grounded insight into the well-being considerations that environmental impacts should consider and probe. In a similar fashion to Nussbaum's tenth capability, *locus standi* is conceptualised as an integral part of pursuing one's valuable ends within a community and as part of the 'fundamental interests of a social being'. It is proposed that the 'fundamental interests of a human agent' are the most immediate considerations for the participation decision shaping considerations. They do however need to be considered in light of a holistic view of a stakeholder's capability sufficiency and inclusive of their 'biological and physical needs' as well as their 'fundamental interests as a social being'.

This evaluation is not a complete evaluation tool for EIA public participation. It is expected to be most applicable as a complementary evaluation of projects, plans and policies where the interested and affected persons are constituted of diverse or unequal affected groups. These groups may in turn be unequally affected by the development. It is expected that the greatest value of this theoretical framework will be found in complementary use with other EIA public participation evaluation frameworks such as those which focus on, *inter alia*, citizen power considerations (Arnstein, 1969; Choguill, 2001; Collins and Ison, 2006; Forester, 2006; Tritter and McCallum, 2006), best practice criteria (Enserink *et al.*, 2009; Palerm, 2010), fairness, competence and communication (Renn *et al.*, 1995; Webler, 1995; Webler *et al.*, 1995; Webler *et al.*, 2001; Renn *et al.*, 2011), or the purposes of participation (O'Faircheallaigh, 2010).

Further, its applicability to the broader sustainability considerations and feedback analysis is particularly suited to complement the types of analysis and evaluation of projects that require an

integrated understanding of a 'strong' sustainability (Lamorgese and Geneletti, 2013), the 'safe operating space' and environmental ceilings (Ostrom, 2009; RockstrÖm *et al.*, 2009a; RockstrÖm *et al.*, 2009b; Galaz *et al.*, 2012; Dearing *et al.*, 2014; Steffen *et al.*, 2015), together with the appropriate social foundations (Raworth, 2012; Dearing *et al.*, 2014) as they apply to the safeguarding of capabilities.

5.1.3 PARTICIPATION CAPABILITY THRESHOLDS AND CEILINGS

Outlining best practice guidelines are important for the evaluation of EIA public participation (Palerm, 2010). Rather than setting a perfect standard for equitable public participation, the CA identifies a minimum participation requirement, or 'threshold', that cannot be reasonably rejected. The use of 'thresholds' in this formulation indicate that stakeholders are vulnerable as well as capable (Gasper, 2008b; Gasper, 2008a).

Public participation in environmental assessment has been grounded on a range of propositions. One such proposition is that public participation is justifiable on the grounds that it can lead to 'better' environmental decision. This research advocates that participation should be grounded on the principle of fairness. This implies a fair and equitable distribution of environmental benefits and costs. Reflecting on the observations in the cases, and through the consilience project of the dissertation, the emergent theoretical framework establishes what 'minimally fair participation' conditions can entail when conceptualised from the capabilities approach. These are conceptualised to be well-suited to, and superseding of, the reasons for participation that may or may not be realisable in different contexts or project characteristics.

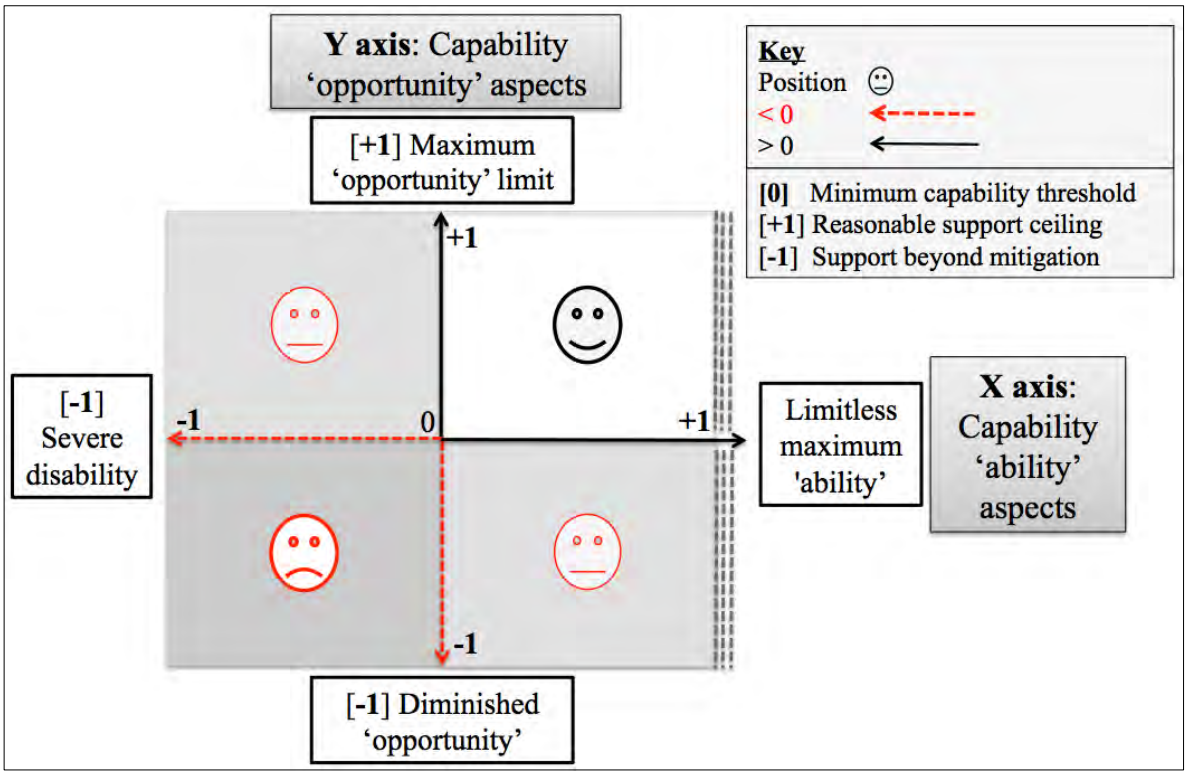
This framework does not specify what the capability thresholds should be, but provides an outline and criteria for their determination. The empirical capability probes of 'opportunity', 'ability' and 'constraint' employed by this research are used to illustrate this. Threshold specification is proposed to be contextually interpreted, and determined at a project and local level by the professional participation facilitator. It is proposed that in such determinations the practitioner should be cognisant of three categories of capability sufficiency: (a) the biological and physical needs, (b) the fundamental interests of the human agent, and (c) the fundamental interests of a social being (Nielsen and Axelsen, 2016). It could also be determined through locally adapted policies or guidelines that have themselves been established through a participatory process. If it is considered appropriate, the use of Nussbaum's list can provide a starting point.

Participation is a dynamic process. For conceptual clarity, the model describes the 'first instance' of participation indicating the capabilities that a stakeholder brings to the process on notification or registration as an I&AP. It is in this initial situation that positive gains or negative

impacts on capabilities can be compared with and potentially attributed to the process. Figure 33 below illustrates a matrix that displays the potential relationship between capability opportunity and ability for the realisation of participating in political activities that will affect their future environment in the first instance of participation.

Figure 33 below indicates the minimum reasonable demands necessary for participation in EA when considering two of the capability probes of 'opportunity' and 'ability'. They are conceptualised within a framework for the possibility of positive capability expansion. This presents the first instance of participation and situates a stakeholder descriptively according to their capability probes of 'ability' and 'opportunity' for participation. The X-axis and Y-axis ranges between 0 and +1, are the targets for 'meaningful' participation. It is proposed that a reasonable argument for capability support should be to move a stakeholder into this range: the top right quadrant.

Figure 33: Conceptualizing capability expansion: 'opportunity' and 'ability' thresholds



The Y-axis of Figure 33 above considers the threshold range of individual 'opportunity' considerations for capabilities. Guided by Holland (2008) the maximum capability expansion [+1] for 'opportunity' is indicated the capability limit for 'opportunity'; beyond which unfair 'opportunity' arrangements may occur which have an adverse effect on other capabilities and the efficiency demands of the EA process. This is the capability opportunity 'ceiling'.

The X-axis of Figure 33 above considers the range of capability 'ability' considerations in the first instance of participation. Stakeholder 'disability' is a major field of applied CA research (Wolff and de-Shalit, 2013). The matrix in Figure 33 above indicates a threshold for ability but does not indicate a ceiling, as the high-performing potentials for human ability are limitless and not relevant for the justice considerations of 'meaningful' or 'sufficient' participation. The matrix indicates that a disabled person is faced with more than one dimension of challenge to participation. The hypothetical person in the bottom left of the matrix faces both lack of opportunity types as well as deficiency of ability types of capability. The matrix implies that ample opportunity without mitigation for disability may not necessarily lead to effective participation: the top left quadrant.

Beyond the physical disability foci, the demands of adequate engagement with the decision making process require a level of mental ability that is appropriate to understanding the technical aspects of the project as well as engaging in decision making forums. There is a level of severe mental or other disability however that could reasonably be identified to be beyond the scope of assistance. This research proposes that the minimum threshold of ability be cognisant of both disability aspects as well as what are deemed to be appropriate ability considerations.

The zero point indicates the hypothetical minimum 'opportunity' and minimum 'ability' thresholds for an individual's capabilities. This condition reflects what Nielsen and Axelsen (2016, p. 2) would term "capabilitarian sufficiency" where the individual is free from "unfair duress and significant pressure against succeeding in central areas of life". Both opportunity and ability can be elaborated for the practitioner's determinations of capability sufficiency through considering how the two probes intersect with the stakeholder's:

a) Needs to ensure biological and physical well-being.
b) Autonomy in forming and reforming valuable ends.
c) Pursuit of valuable ends within a community (Nielsen and Axelsen, 2016, p. 5).

Equal participation is a noble goal for the practice. However it is generally unattainable (Sen, 1979; Turiel, 2003; Brooks, 2014; Lehohla and Shabalala, 2014; Stewart, 2014c; Wendelspiess, 2014). It embodies the type of naïve transcendental institution a Rawlsian approach may propose (Sen, 2009), or the post-Apartheid South African legislators intentions for inequality redress. The goal of public participation in EA is not to be an agent of social engineering. Nor is it a principle means of equality restitution. To set a goal of equal participation misrepresents the purpose of the decision making tool of EA. In contrast, to set a goal of participation that is governed by capability sufficiency provides for a minimally just foundation for what can be considered reasonably fair participation. These grounds would require that the distributive aspect ensures that no person or groups of people face agreeably unjust participatory situations. On these terms, meaningful participation can be roughly equated to 'the ability to participate in political activities that affect one's future environment' in a manner that is free from prejudicial duress and substantial pressure against succeeding in EA public

participation. Capability sufficiency is proposed in this sense despite the variety of individual conversion factors and despite the spatial and temporal persistence of unequal social and economic stakeholder disparities. Best practice and guidelines that require equitable participation can benefit from this sufficientarian insight from the capabilities approach.

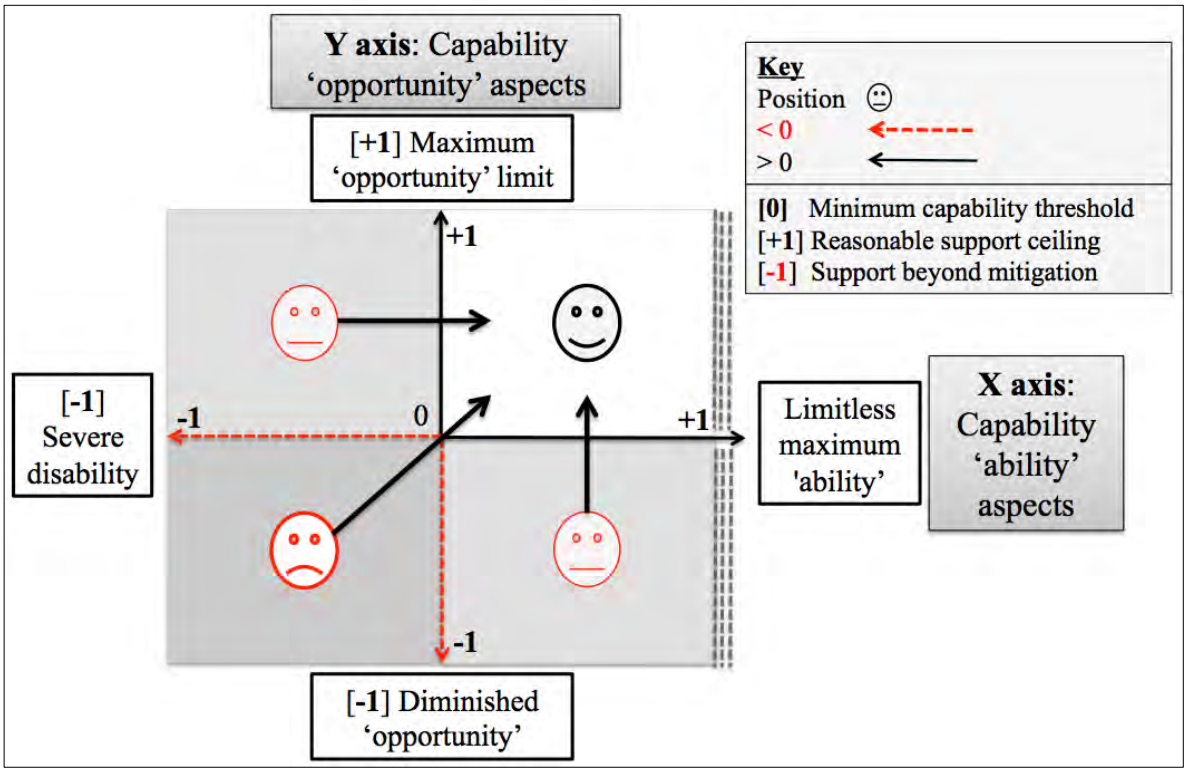
The inequalities entrenched in South African society present a significant challenge to the realisation of equitable participation. This framework proposes that the first step towards a more meaningful participation process is to identify capability sufficiency. It is through first establishing terms for a minimally fair decision making process that the participation practice can endeavour to move on to more meaningful and equitable forms. This research cautions that participation outcomes or effectiveness criteria without consideration of stakeholder capabilities will inevitably miss this critical distinction.

Capability sufficiency, in contrast, allows for unequal stakeholders to engage with the process in a way that can be acceptable on grounds of a minimal conception of justice. The focus on capabilities safeguards against an intolerance towards gross inequalities between stakeholders. At the same time, it does not abide inertia and abdication of responsibility for capability support by practitioners. In South Africa, this inertia is exemplified by the GAS, WIND, MINE and REDZ cases where local populations were not included in the decision making due to the immensity of the challenge of their educational and language support requirements. These cases unsatisfactorily considered the sufficiency of the fundamental interests of a human agent, and ignored the potential inputs from stakeholder's functional capabilities such as 'rational reflection', 'critical thinking', 'normative evaluation', 'functional and technical skills', and 'understanding the implications of choices and actions for one's life'.

This motivates that rather than an egalitarian principle, a sufficientarian principle should be applied for the identification of these participation capability thresholds (Pruss, 2006; Stewart, 2014b; Stewart, 2014a; Nielsen and Axelsen, 2016; Robeyns, 2016). The threshold determinations for participation do not need to be perfectly equal but they can be sufficient on grounds of minimally just provisions.

Figure 34 below illustrates how the EIA process can provide constructive capability support that targets 'opportunity' and 'ability' aspects of capabilities that stakeholders can realise, thereby providing targeted support to enhance the capabilities of a particular stakeholder.

Figure 34: Conceptualizing capability change through participation: Capability expansion



The positive increase in capability 'opportunity' and 'ability' indicated in the top right quadrant of Figure 34 above delimits ethical grounds for 'meaningful' participation functioning for the stakeholder. It implies sufficient capability support. Likewise, the utility gained from support provided to the stakeholder in the left half of the matrix, for example through disability support, indicates a more equitable and meaningful participation process for the stakeholder facing disability disadvantages. The goal of capability 'opportunity' and 'ability' types of expansion is intended for the process to provide an adequate quality and quantity of opportunities so that there is an identification of, and the subsequent removal of, inequitable distributions of 'opportunity' to participate in the EIA decision making.

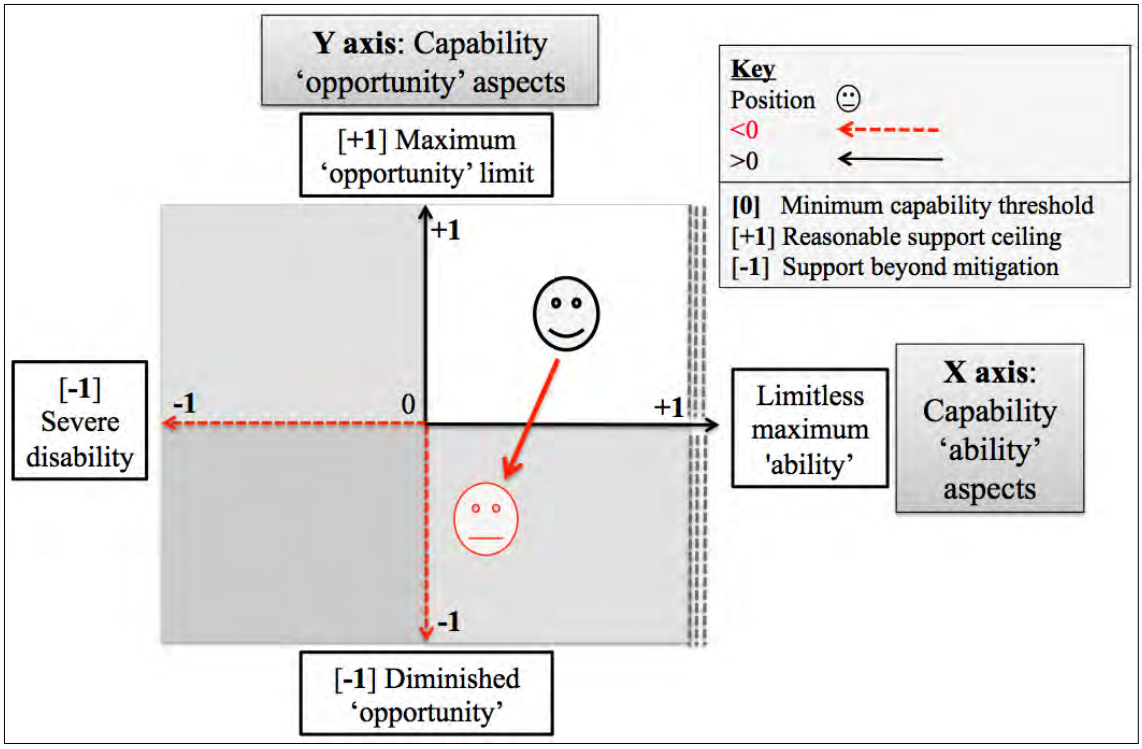
The goal of capability expansion for considerations that relate to capability 'ability' and for 'opportunity' demand a minimum conception of participation to be met for both of these two criteria. Disaggregation in the identification of these two criteria is useful. However, the relationship between 'ability' and 'opportunity' aspects can be coupled, (bottom left quadrant of Figure 34), and involves feedback between the two. Figure 34 above indicates that it can have a compounding effect in cases of capability deprivation for cases of both diminished capability 'opportunity' and limited or differently-abled 'ability'. Understanding the interrelationship between these two empirical probes can be useful for policy and practice as, in some cases, capability expansion for ability can instrumentally and simultaneously expand a stakeholder's participation opportunity. The workability of this conceptualization of capability expansion is elaborated when considering the practice implications.

Practitioners will need to identify the degree to which 'ability' and 'opportunity' interventions would require support provisions for individuals and for groups of individuals as they relate to national (DEA&DP, 2011) and international (UNECE, 1998b) best practice guidelines.

The PARK case presents an example of capability expansion. Section 4.7 demonstrated how the support provisions of the process provided the requisite interventions to enable stakeholders sufficient participation opportunity. Although certain aspirations were present at the start of the BA that were not included in the project, what the local stakeholders were able to achieve and become through the participation process and through the implementation of some of their contributions to the project design, indicate expansion of capabilities relating to the three categories proposed by Nielsen and Axelsen (2016, p. 5). The quality of support provided to facilitate their participation contributed towards the expansion of capabilities relating to their biological and physical needs, their fundamental interests as autonomous and reflective citizens, and enabled pursuit of their formed and reformed ends within their community. The PARK case suggests a moderate correlation that indicates that PARK stakeholders' believed that their functionings matched their capability and that their participation allowed them to influence what they consider valuable regarding my future environment.

Sufficient capability expansion is a goal for meaningful participation, but capability protection is imperative. Figure 35 below illustrates a case where the EA participation process has diminished or retarded capability 'opportunities'.

Figure 35: Conceptualizing capability change through participation: Diminished capability



An equity evaluation should consider the negative capability effect on the individual stakeholder from such diminished opportunity (or curtailment of capability). This indicates more than an insufficiency of support. It suggests capability curtailment. This is conceptualised and represented in Figure 35 above on the Y-axis as diminished 'opportunity'; between zero and -1. In this hypothetical case, opportunities between -1 and 0 would represent unreasonably and severely diminished or restricted types of opportunity. Figure 35 above suggests that such conditions are likely to curtail an individual's participation capabilities. Such a scenario could result in decisions that adversely affect the stakeholder's participation functionings, their future environment and their well-being. These decisions, in turn, could have negative effects that impact on the stakeholder's choice and ability to live the kind of life they consider valuable.

The cases present examples of capability curtailment in both procedural 'opportunity' and in 'ability' types of ways. The WIND case presents an example that indicates diminished opportunity and ability to influence the EIA through public participation. The respondents of the WIND case expressed high levels of frustration in the participation process citing disappointment in their ability to make a meaningful impact on the project design and decisions made. The adaptive downgrading of their capability to participate in environmental decision making that affects their lives (Ls6)[126] indicates that those stakeholders felt their capability was curtailed. The MINE case presents stakeholders who felt that the process actively disempowered them. Stakeholders cite examples of exclusion and lack of consultation in a secretive and politically charged process. The MINE case assessment practitioner was very slow and unclear in communicating the procedural process for an EIA that comes under the South African Minerals Petroleum and Resources Development Act and the available opportunities for stakeholder involvement. In four of the five case studies, the social perspectives generated by the Q-method, (GAS:F2; GAS:F4; WIND:F3; MINE:F5; REDZ:F1; REDZ:F3; REDZ:F4)[127], indicate that process excluded those less able to articulate their opinion. The coupling of 'opportunity' and 'ability' considerations are highlighted in the PARK, WIND and MINE cases where the ability to present an opinion is associated with procedural opportunity. The success of the appropriate and effective stakeholder capability support in the PARK case contrasts the frustrations and failures of the WIND and MINE stakeholders 'opportunity' and 'ability' concerns.

Focusing on what individuals are able to achieve and become in light of what they consider valuable brings into scope three potential capability probes. The stakeholder's (i) 'opportunities', (ii) their ability to make the most of such opportunities, and (iii) the potential 'obstacles' to capability realisation. Sen has cogently argued that the aim of applying a conception of justice to an institution should primarily focus on the removal of unjust arrangements.

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[126] Ls6 [I am able to participate in environmental decision making that affects my life if I want to]

[127] For example, [MINE:F5] 'The process excluded those less able to articulate their opinion, relevant information from certain groups was ignored and financial resources were not provided to enable those who needed it to participate effectively'.

> When people across the world agitate to get more global justice […] they are not clamouring for some kind of 'minimal humanitarianism'. Nor are they agitating for a 'perfectly just' world society, but merely for the elimination of some outrageously unjust arrangements to enhance global justice, […] and on which agreements can be generated through public discussion, despite a continuing divergence of views on other matter (Sen, 2009, p. 26).

Applied to EA, the focus of a CA evaluation is not establishing a perfectly just best practice, but the acquisition of a finer-grain understanding of unjust participation situations that individual stakeholders face that cannot reasonably be rejected as unfair. This seemingly complicated difference is emphasised by the wider literature on contemporary theories of justice as fairness (Rawls, 1971; 1999; 2001; Fabre and Miller, 2003; Blythe, 2008; Culp, 2013) and reason giving (Scanlon, 1978; Scanlon, 1998; Raz, 2001; Searle, 2001; Searle, 2002; Raz, 2011; Crabtree, 2013; Scanlon, 2014). Understanding the contextual actions of the individual stakeholder, as well as the provisions for such actions, should therefore complement the understanding of the purpose of participation in EIA.

Figure 36 below elaborates participation capability expansion further considering all three empirical capability probes suggested by Anand *et al.* (2007), adding the third dimension of capability 'obstacles'. This probe is presented within a positive conception in order to fit with the axis orientation of the model and conceptualised for capability expansion in Figure 36 as the mitigation of obstacles. The zero point for Figure 36 below indicates the hypothetical first instance minimum sufficiency threshold for the individual's capability as conceptualised in this research regarding capability 'opportunity', 'ability' and 'obstacle' types. Where the EIA participation process includes insurmountable obstacles for the stakeholder, the equity evaluation should consider the negative capability effect for the individual stakeholder. The research found that participation barriers or 'obstacle' types are contextual, individual as well as procedurally associated. Mitigation of capability 'obstacles' is intended to widen the stakeholder's capabilities through the reasonable mitigation of identified obstacles to participation. Capability expansion would require identification of and mitigation or removal of those types of obstacles to a minimum threshold of participation. The 'obstacle' type mitigation limit is indicated by +1 on the Z-axis. Beyond this point, it is expected that efforts to further overcome capability 'obstacle' types are both unnecessary and detract from reasonable efforts to protect other capabilities.

Figure 36: Conceptualizing the multidimensionality of capability probes: 'opportunity', 'ability' and 'obstacle' thresholds

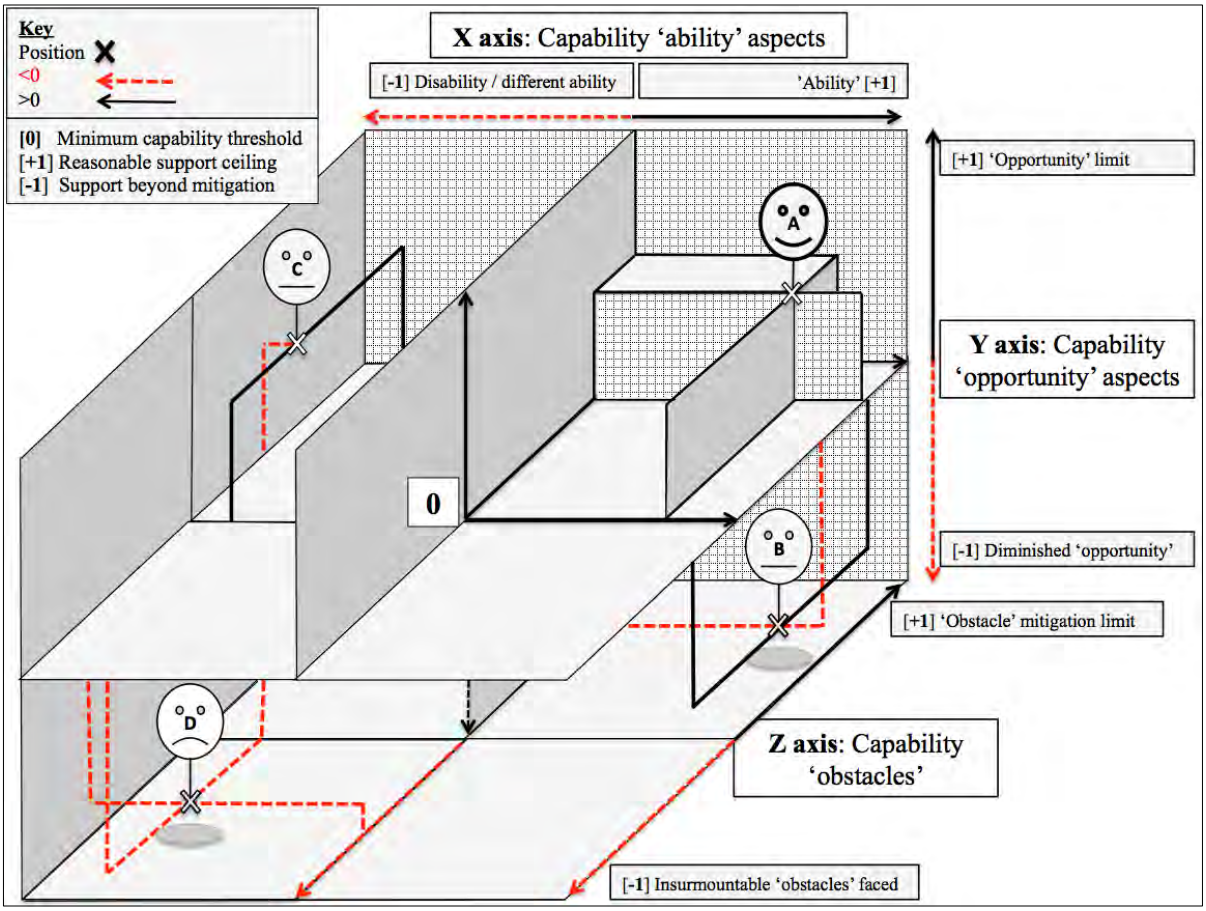


Figure 36 above is explained with reference to the four hypothetical 'stakeholders' in the matrix. Stakeholder 'A' indicates a hypothetical stakeholder who faces no ability, obstacle or opportunity constraints. The utility indicated on the stakeholder's face is not to indicate happiness, but to suggest that their minimum threshold requirements for meaningful participation have been met in the first instance. Capability sufficiency has been achieved. They thereby have no reasonable capability justice or fairness grounds for participation objections. By this conception of justice, that person faces no reasonable unjust equity scenarios that demand an actionable response.

Stakeholder 'B' indicates an able-bodied person, who is not facing any participation obstacles but who has been inhibited from equitable participation due to inadequate opportunity. There are significant regulatory and legislated provisions in the EIA procedures of most country regimes to provide this type of stakeholder with a legal foundation for support. There are also many situations where opportunity types are curtailed through systemic, regulatory and contextual participation procedural stipulations.

Stakeholder 'C' indicates a disabled individual that has overcome a number of obstacles. The individual's opportunities are indicated to be high as a consequence of such obstacles being overcome. This individual is thereby much better placed for participating in the process due to

obstacle mitigation. However, if the individual's disability is not mitigated for, although their opportunities are adequate for an able-bodied person, depending on the individual conversion factors, that stakeholder may still not realise equitable participation.

Stakeholder 'D' represents a disabled person who has diminished ability and opportunity and is, as a consequence of their disability, also unable to access the 'opportunities' of the process. This lack of access is itself an obstacle to participation. Hypothetically, this could be directly associated with their disability and it illustrates the multidimensionality of capability considerations for equitable participation. The systemic practice obstacles to participation compound the challenges to sufficient and meaningful participation further impede stakeholder 'D'.

Of the finite resources that can be allocated to the mitigation of participation obstacles, they need to be rationalized to target threshold levels of capability protection for each person (Nussbaum, 2006b; Holland, 2008). It is possible that at the level of -1 on the Z-axis there are insurmountable obstacles to participation. Practitioners would do well to indicate such deficiencies in decision making. Abstracting obstacles in this way presents a conceptual frame for justifying action or policies that target stakeholder assistance to sufficiently mitigate the associated obstacle challenges within a conception of capabilities justice. The use of three categories of capability sufficiency: (a) the biological and physical needs, (b) the fundamental interests of the human agent, and (c) the fundamental interests of a social being (Nielsen and Axelsen, 2016) in turn, provides exemplars with which to consider the contextual application of the abstracted capability probes. Although capability expansion is the goal of meaningful participation, capability protection is imperative. The purpose of this diagram is to illustrate the interconnectedness of a stakeholder's ability, opportunity and constraints for participation. The multidimensionality in the three axes indicates that sufficient provisions for even two of the three capability type needs may not lead to the realisation of meaningful participation.

5.2 CONCEPTUALIZING THE FEEDBACK LOOPS OF ENVIRONMENTAL ASSESSMENT DECISION MAKING THROUGH THE PERSPECTIVE OF THE CAPABILITIES APPROACH

Practitioners and decision makers in the current practice of EIA that have emerged from ecologically-orientated or engineering-orientated training are not necessarily equipped to deal with the social science and human development demands of evaluation. 'Physical science' and 'ecologically' trained practitioners may see the social and economic values raised by the public as peripheral to the decision making considerations their training and values frame as significant and thereby negate the force of such outside arguments. A strong sustainability approach contests that this may not necessarily result in better decisions being made.

The CA provides a nuanced and elaborated account of the anthropocentric interpretation of the environmental right (Sunstein and Nussbaum, 2004). An equitable and inclusive social, political and economic context is imperative for sustainable ecological functioning. Capability considerations open up the evaluative space to better consider the socio-economic context of the stakeholders' values, enabling the practitioner to better understand their articulated needs and values. Such values may or may not include the typical ecological values of the assessment practitioner.

The following discussion on capability expansion and feedback describes how the process can conceptualise capability expansion reflecting change through the participation process. It elaborates capability curtailment as the changes brought about by the EA participation process that may not have a benign influence on the stakeholder's capabilities.

The framework presented here includes the dimension that, in some cases, the environmental decisions made can curtail capabilities. An understanding of changes in capabilities throughout the participation process highlights how public participation can influence capabilities. Likewise, it is conceptualised, in high performing cases that capabilities can in certain circumstances influence the participation process in instrumental and in substantive ways that can, in-turn, result in intended positive environmental outcomes and further changes in capabilities. As the goal of expansion of capabilities is the purpose of the freedom orientation of a capabilities analysis, the theoretical framework presented in the discussion below emphasises how positive changes can lead to increased freedoms to choose the kind of life that a stakeholder considers valuable. It also identifies what the reasonable minimum provisions for capabilities should be. Below this threshold, the framework considers the provision for capabilities as inadequate.

5.2.1 PARTICIPATION CAPABILITY AND FEEDBACK ON SYSTEMS

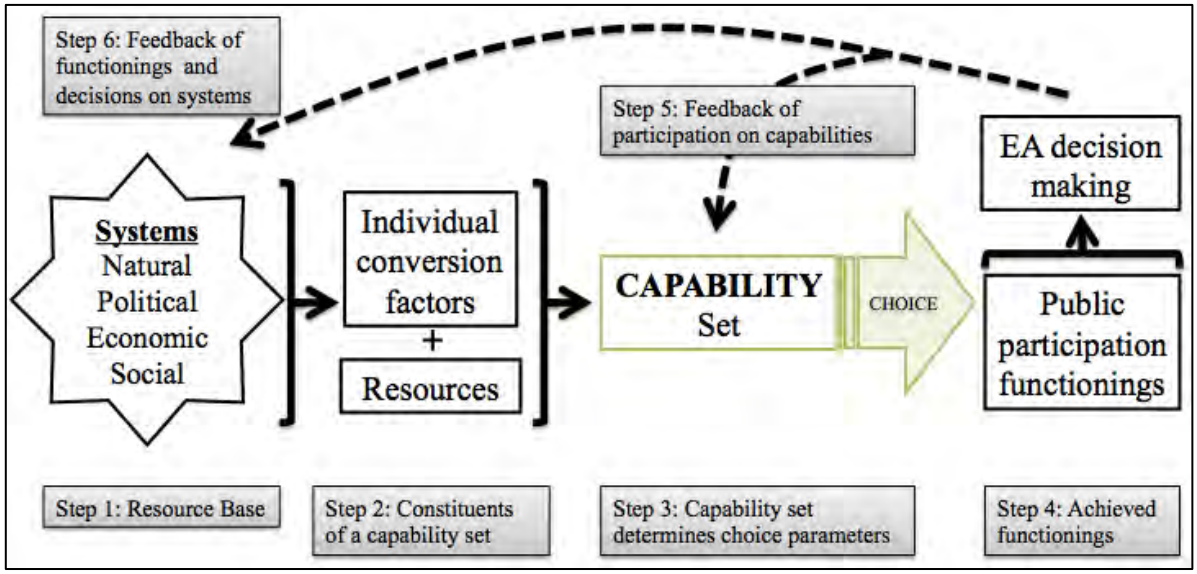
This section proposes an outline how a capabilities approach to EA public participation can fit within the general practice of environmental assessment. This is proposed through an extension of the capabilities focus to the *ex-ante* and realized feedback consequences of the EA decision making process on systems and capabilities. This section elaborates developing the appropriate type of human development and well-being training for an assessment practitioner. It extends the EAPs considerations to include in evaluation the realized impacts of EA decisions on the capabilities of current (horizontal capability distribution) and future generations (vertical capability distribution). Their quality of choice to influence the shaping of decisions is posited to be proportional to their available capabilities.

Laedre *et al.* (2014) have outlined the impact assessment indicators that are useful for considering sustainability. The model proposed here builds upon their framework as it applies to the interrelationship of social, ecological and economic constituents of the environment. Despite the

challenges of defining sustainability (Ramsey, 2014), the notion of using impact assessment tools as a means of appraising sustainability have become increasingly popular (Bell *et al.*, 2012). Laedre *et al.* (2014) propose that at the project level the evaluation of economic, social and environmental impacts provide indicators for a sustainability impact assessment.

Figure 37 below presents a conceptual diagram that shows how this research understands participatory decision making when viewed from the perspective of the capabilities approach and situated within its decision making context. Figure 37 below illustrates a feedback relationship between the natural systems that support human well-being and the capability for making good choices for those systems.

Figure 37: Conceptualizing the feedback relationship between systems and choice in participatory decision making in environmental assessment (after Robeyns, 2006; Leßmann and Rauschmayer, 2013)



Building on the work of Leßmann and Rauschmayer (2013) the direction of the diagram (Figure 37) suggests that a capability set is derived from the combination of resources available to the stakeholder and their individual conversion factors. This extends the conceptual 'commodity bundle' of an individual in Figure 37 above to the general systems context. The diagram indicates that the resource base is conceptualised as natural, political, economic and social systems. Out of the capability set, the stakeholder can participate in the environmental assessment for reasons and to the extent they consider reasonable. The initial decision to engage with the process and realise *locus standi* is also implicit in that choice.

The flow of Figure 37 starts with 'Step 1' in the bottom left corner and aligns with an elaboration of the Senian utilitarian frame presented in Figure 3 (p. 37). The resource base includes the natural, political economic and social systems. They provide the ecosystem goods and services that contribute to life and impact on an individual's commodity bundle. 'Step 2' illustrates that the constituents of a capability set are a combination of individual conversion factors and the available

resource base. ‘Step 3’ conceptualizes a capability set as the sum of its constituents and as the foundation for an individual’s ability to choose the kind of life that they consider valuable. In the context of participatory EA, this choice is grounded on the ability to participate in and potentially influence environmental decision making. ‘Step 4’ illustrates the functionings of a stakeholder that exercises their agency to participate in EA. Figure 37 indicates two types of feedback. ‘Step 5’ indicates that through the participation process there can be a feedback on an individual’s capability set. Step 6 illustrates the *ex ante* feedback of participation functionings (and decision making) on systems.

The capability set is diagrammatically positioned to influence the choice that a stakeholder makes. Capabilities are closely related to choice because they are valuable to the individual and are closely related to the intended ends of actions taken. It follows that decision making functionings would be based upon the values and reasons associated with choice. The model assumes that choices made would intend to safeguard capabilities. This model is an oversimplification of the relationship between capabilities and systems. However, it provides a useful starting point for the practitioner or researcher with which to analyse a case and consider the potentials of this dynamic relationship.

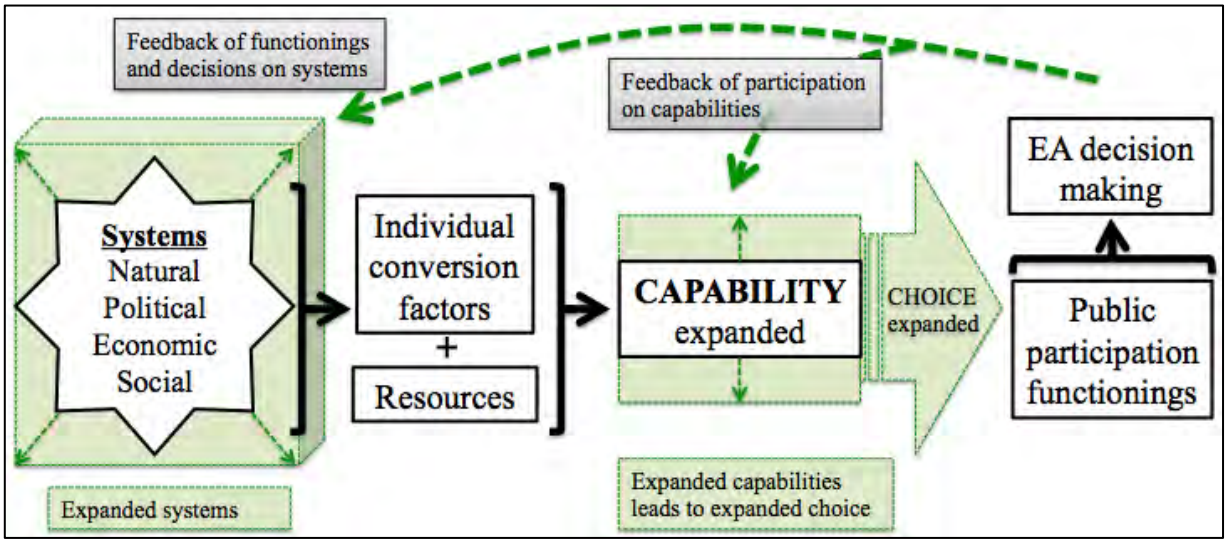
Schultz *et al.* (2013) and Leßmann and Rauschmayer (2013) were the first to demonstrate the workability of feedback loops as a means to establish a sustainability fitting capability approach. The feedback relationship exemplifies Neumayer’s (2012, p. 576) argument that, “properly understood, there is no real difference between human development and sustainable development”. The diagram emphasises Leßmann and Raushmayer’s (2013) argument that sustainable development requires a consideration in the decision making of how functionings impact on ecological provisioning and support systems. Likewise, Pelenc and Ballet (2015) have demonstrated that a capabilities approach to the considerations of decisions that affect natural capital and ecosystem services requires a ‘strong’ sustainability approach. Figure 37 above suggests that there is a direct and co-dependent feedback of decisions on functioning systems. Scholtes (2011) however identified that the interdependency between individual capabilities and the environment has not been consistently modelled in the CA.

Leßmann and Masson (2015) have demonstrated that choice can be influenced by social factors in preference formation. As a consequence, they conceptualise capability formation within a framework of planned behaviour when applying it to decision making issues, in their case, sustainable consumption decisions (see Figure 4 on p. 52). They clarify that changes in attitudes can have a direct impact changing intended choices to those that reflect the changes in social attitudes. In this way, the EA participation model in Figure 37 relies upon Leßmann and Masson’s (2015) incorporation of social and political systems and their influence on choice as a starting point for the workability of the feedback of choice and social systems on capabilities.

Expanding a threshold-ceiling framework to ecological considerations is proposed by Holland (2008). She proposes that determining the appropriate capability ceiling entails that deliberators address the degree of capability protection that society can credibly promise while at the same time protecting a threshold of the central human functional capabilities for each person. Thinking in this way could afford deliberators a framework within which to derive solutions to the commonly experienced conflict between economic development and environmental protection. The problem solving framework is justified directly in terms of their implications for capability protections. Capability protections, in turn, define the basic conditions of justice for decision making (Holland, 2008). Considering the 'tragic trade-offs' that are highlighted by ceilings and thresholds it is important to highlight that for the majority of the modern era the expansion of human capabilities has come at a cost to the environment. It has only recently been acknowledged that such impacts, at a global scale (Steffen *et al.*, 2015), pose a detrimental threat a 'safe and just' living space for human well-being (Dearing *et al.*, 2014, p. 227). It is critically important for the assessment practitioner to conceptualise the expansion of capabilities in light of the fundamental support systems. In this regard, a duty of care is on the practitioner. Likewise, it is equally important for the practitioner to conceptualise the direct, indirect and cumulative impacts that changes in the resource base or systems will have on capabilities. Understanding feedback in this way can provide a useful schema for the practitioner to test and evaluate how they have integrated human development and well-being considerations into an assessment.

Figure 38 below diagrammatically presents how the theoretical framework of this research conceptualises expansion of capabilities with a dynamic feedback on functioning systems. It presents a hypothetical and idealized conceptualization of capability expansion together with an expansion of systems.

Figure 38: Conceptualizing the feedback of EA decision making on systems: expansion of capabilities and choice (after Robeyns, 2006; Leßmann and Rauschmayer, 2013)



Sources of variation in capability considered from spatial and temporal scales need to consider environmental diversities as well as environmental changes. It is hypothesized in Figure 38 that an expansion in capabilities, when governed by the duty of care through environmental assessment, could lead to a positive effect on the systems. Likewise, an expansion of the resource base provides not only an expansion of capabilities but also, critically, an expansion of choices for the individual. Expansion of choice, in turn, influences the quality of decision making.

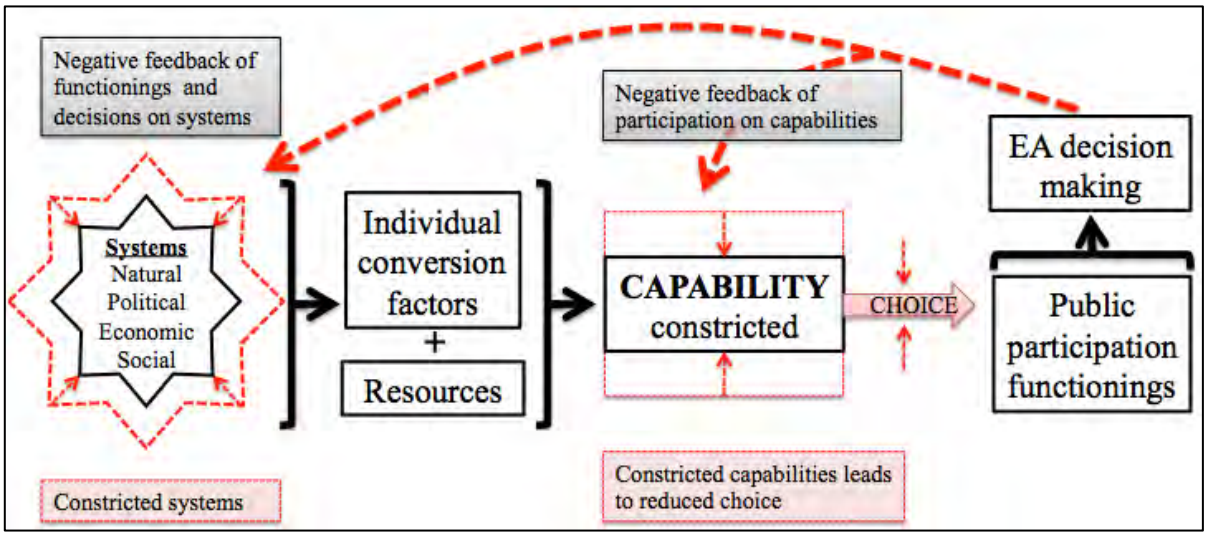
The purpose of this conceptualization in Figure 38 above is to distance the research from the 'trade-off' or false dualism that, without a duty of care, capability expansion may have a positive short-term effect on economic systems but is more likely to have a negative effect on natural systems (Sen, 1990; Leßmann and Masson, 2015; Pelenc and Ballet, 2015). This may be the case for many environmental decisions. With the mainstreaming of sustainability thinking in development, it is important to be able to conceptualise a balanced system where human capability expansion is conceived of together with sustainable natural, political, economic and social systems as robust well-being support systems.

The notable capabilities scholar Jay Drydyk (2010) has cautioned that participation, empowerment and democracy do not necessarily emerge together nor work together in a linear fashion. This is problematic for the face-value assumption of linearity in the model of capability expansion where participation indicates an increase in freedoms such as those of agency and choice. Drawing on Sen (1999b), the model proposed here suggests an instrumental relationship between participation and democratic governance in decision making that, when effective, would lead to an expansion of capabilities. This implies an increase in an individual's agency with an increase in the freedoms to choose the kind of life that one would consider valuable. The instrumental relationship assumes much regarding the nature of participation, unequal empowerment, sub-democratic development and the chance that participation can be betrayed from outside the process (Drydyk, 2005; 2010; 2011; 2013). These limitations notwithstanding, Rauschmayer *et al.* (2013) have shown that due to the open-endedness, non-linearity and uncertainty of sustainability transitions, the governance of such transitions requires multi-level engagement and social learning. Concurring with Rauschmayer *et al.* (2013) this research advocates that two of the niche governance levels for decision making, the individual level and the project level, are within the EA process of public participation. It is to this end that the model considers the participation experience of the stakeholder within the spatial and temporal context of an environmental assessment, and attempts to consider the changes that may be brought about by the feedback of *ex-ante* decision making.

Figure 39 below presents a contrasting scenario. Figure 39 suggests that constricted systems have a negative impact on the resource base and individual conversion factors. These, in turn, have a negative effect on capabilities by curtailing the choices that are realistically possible for that capability set. Figure 39 illustrates that from a truncated set of choices, capability curtailment and

reduction in choice can potentially lead to a succeeding negative impact on both capabilities and on the systems that support human well-being. It also suggests that if the feedback is not broken through a particular and specific intervention, the diminished choices left available will have a negative impact on the decision making outcomes.

Figure 39: Conceptualizing the feedback on systems of constricted choice as it relates to constricted systems and capabilities (after Robeyns, 2006; Leßmann and Rauschmayer, 2013)



This negative scenario is predicated on the current understanding that there are ecological limits which constrain our ability to live safely in the world (RockstrÖm *et al.*, 2009a; Steffen *et al.*, 2015) and therefore constrain the available problem solving choices we are faced with. The planetary boundaries framework defines a safe operating space for humanity based on the intrinsic biophysical processes that regulate the stability of the earth system. It is currently understood that this natural system is threatened at a planetary scale by climate change and biosphere integrity (Steffen *et al.*, 2015).

This model suggests that this type of feedback can be also be considered at a project level concerning local system impacts that result from decision making. These impacts are conceptualised, in turn, to have an influence on capabilities and the associated breadth of choice available within a changed environment. The impacts these changes have on capabilities are conceptualised from the justice imperative concerning what situations, or changes, would result in unjust arrangements for the affected persons. Curtailment of capabilities is a curtailment of their freedoms to choose the kind of life that they consider valuable.

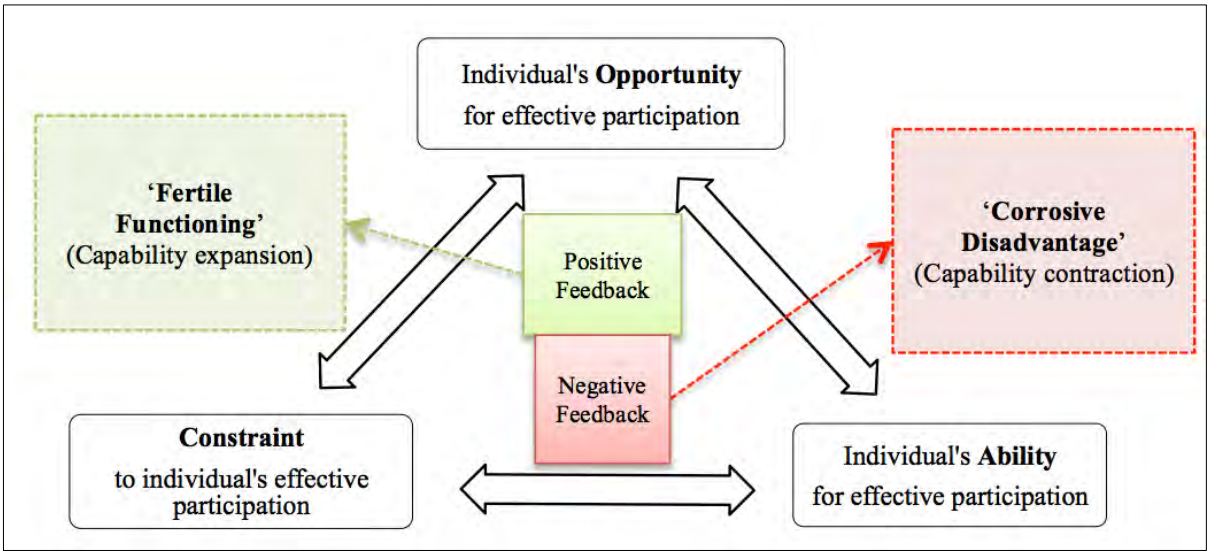
Dearing *et al.* (2014, p. 227) argue that "humanity faces a major global challenge in achieving well-being for all, while simultaneously ensuring that the biophysical processes and ecosystem services that underpin well-being are exploited within scientifically informed boundaries of

sustainability". Their empirical work highlights the feedback indicated in the model in Figure 39 above. They found that the environmental ceilings were exceeded for degraded water quality. They conclude that the "conjunction of the social needs and environmental constraints around the issue of water access and quality" exemplifies the wider significance of the 'safe and just operating space' approach for sustainable development (Dearing *et al.*, 2014, p. 227). One way of contributing towards this wider governance called for by Dearing *et al*. (2014) is to implement a consideration of the social needs and environmental constraints at the project level through EA.

5.2.2 *INSTRUMENTAL RELATIONSHIPS BETWEEN SELECTED CAPABILITY PROBES AND UNDERSTANDING THEIR COMBINED IMPACT*

An extension of the model's feedback hypothesis is the notion that it is possible to identify the instrumental relationship between effective public participation and the realisation of capabilities. Wolff and de-Shalit (2013, p. 65) use the term 'fertile functioning' to describe the positive impact that realized capabilities can have on other capabilities for increasing an individual's freedoms. Fertile functioning is the foundation for what Nussbaum (2006b, p. 70) calls a 'flourishing life'. Figure 40 below introduces how the research has come to conceptualise the conditions for 'fertile functioning' or 'corrosive disadvantage', as they can be observed using capability indicators.

Figure 40: Integrating Anand's (2007) capability probes within the feedback of 'fertile functioning' and 'corrosive disadvantage' (after Wolff and de-Shalit, 2013)



The positive feedback of capability expansion proposes that this feedback loop can lead to types of 'fertile functioning'. This instrumental relationship can also be conceptualised from a negative perspective. Wolff and de-Shalit (2013, p. 65) describe the negative impact on capabilities that thereby further curtail other or associated capabilities as "corrosive disadvantage". A negative feedback of unmitigated constraints, disability and lack of opportunity is conceptualised in Figure 40

above as negatively affecting capabilities and to have a direct influence on the contraction of capabilities leading to a position of 'corrosive disadvantage' for that individual. For the individual without the opportunity or ability to influence the development in ways they consider valuable regarding their future environment, if the development has negative consequences on their capability (such as 'living in a clean and healthy environment'), they can face further capability curtailment. 'Fertile functioning' and 'corrosive disadvantage' present two polar extremes and stakeholders may not necessarily fit neatly into either category. These are however useful concepts with which to consider the *ex-ante* and *ex-post* imperatives of environmental decision making process.

5.3 CONTINGENT THEORETICAL ASPECTS

5.3.1 LIMITATIONS AND ASSUMPTIONS

There are at least three aspects of this model worth highlighting that are not adequately dealt with in this research, yet are important for its workability. Firstly, the identification of capability thresholds of the earth systems goes beyond the scope of the public participation analysis of this research. The research relies on the specialist studies of each case to establish such limits. Conceptually, it also relies on the work of Dearing *et al.* (2014) and Steffen *et al.* (2015) which provide an understanding of the relationship between the consequences of human decisions and the limits of growth. These limits are however not currently scaled down to the project level and therefore are currently not appropriate at the EIA scale. The specialist studies of the cases provide this scientific verification and are relied upon for this purpose. Conceptually, they do provide an appropriate way of thinking regarding feedbacks and an understanding of earth systems that is appropriate to the EA decision making process.

The expansion of capabilities conceptualised in this model is also cognisant of the importance of considering both the ceilings for human capabilities as well as earth system capabilities. Although the scope of the empirical research in this study focuses on human capabilities in public participation, to be applicable to the wider project of sustainability science, they need to be considered within the system context in which they exist. A hypothetical trade-off in this regard could consider the acceptable, or reasonable limits that society can impose on the capability of a river to flood. When poorly managed, this could threaten human well-being in an urban area as well as compromise the goods and services that could be derived from the natural flow regime of that river. It is expected that subsequent research would consider refining the grounds for defining acceptable project scale decision making conditions for the practical trade-offs that would allow for the healthy system functioning, as well as continued expansion of capabilities of those living within that system (Rauschmayer and Wittmer, 2004; Griewald and Rauschmayer, 2013; Rauschmayer *et al.*, 2015).

The extension of capabilities to systems, such as the natural system in Figure 39 (p. 212), may be problematic in practice. The 'ecological reserve' that has been determined under the South African Water Act (Section 16 and Section 22) does provide a legal foundation for such extension of the ecological considerations. Importantly, this would contribute towards attributing an integrated evaluation of the significance of natural intrinsic considerations balanced with those of human health and well-being.

The second aspect of this model that is not adequately dealt with in this empirical research is the justice considerations of the decision making. There is a current debate over the workability of the CA as a theory of justice for future generations as it is problematic to assign rights to those yet to be born (Watene, 2013). It is anticipated however that this model provides a useful discussion tool for future CA research, assessment practitioners and decision makers, to conceptualise the environmental consequences of capability expansion in the current generation. The value of the expansion of human choice in decision making, as a part of a feedback mechanism, is a critical conceptualization for intergenerational effects on capabilities. Further, the well-being of future generations is an informative benchmark regarding the testing of the limits to the expansion of capabilities.

The third aspect the model assumes, which is not adequately dealt with in the empirical research, is the relationship between an individual and wider society. The layering of multiple individual analyses, or considering the networking of individual experiences, could yield insightful results regarding collaboration and collective decision making (Pelenc *et al.*, 2013; Kabeer and Sulaiman, 2014; Murphy, 2014; Pelenc *et al.*, 2015). Where possible the methodology targets the operation of 'socially dependent individual capabilities' to provide an indication of the collective action of stakeholders. The narrow focus on individual capabilities however locates a more robust analysis of collective actions beyond the scope of the empirical task in this theoretical framework.

5.3.2 CONTINGENT FEEDBACK ASPECTS AND ASSUMPTIONS

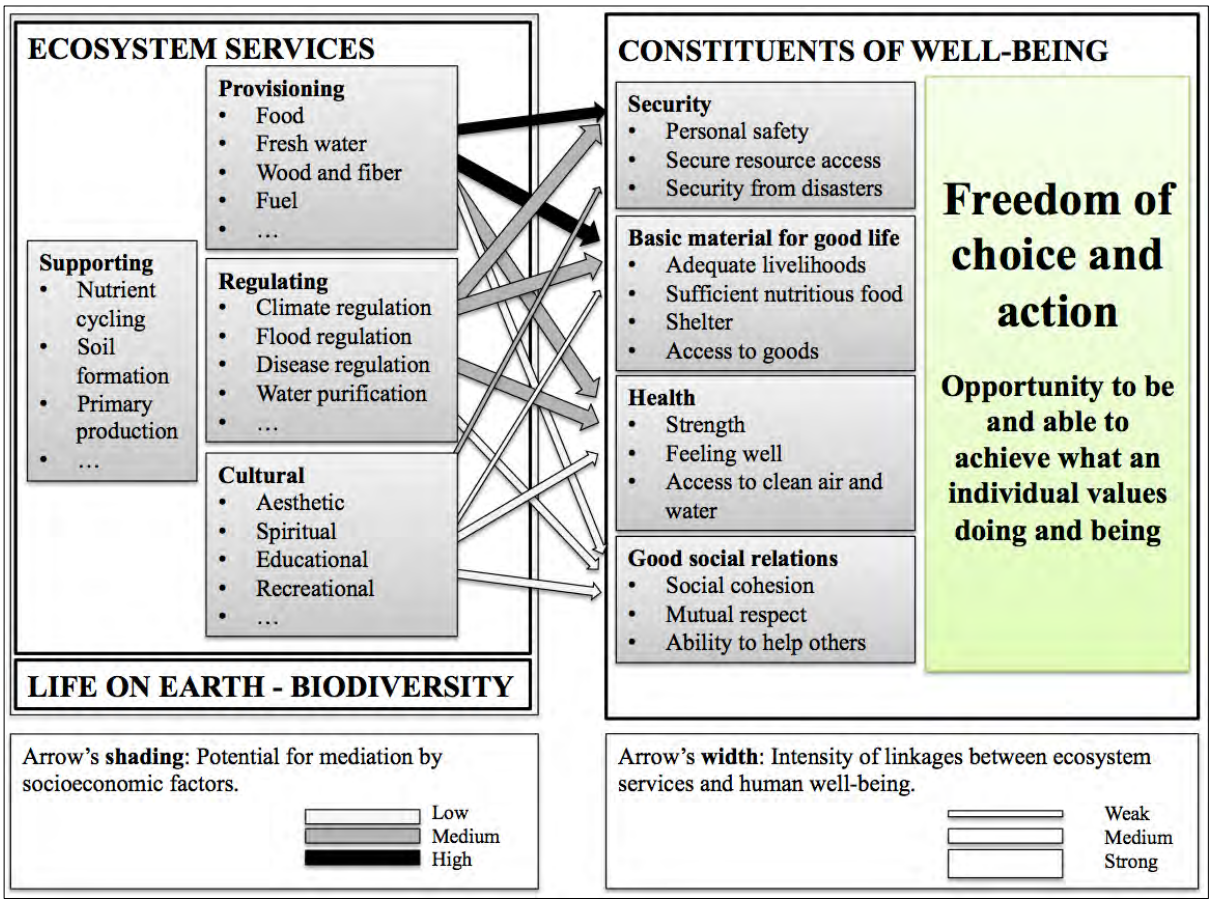
There are at least two contingent considerations regarding the feedback mechanism of this model that affect its workability: jurisprudence and ecosystems goods and services. For it to be workable in the South African EA context, this framework presumes that courts are willing to substantively interpret socio-economic rights (van der Berg, 2015). van der Berg (2015, p. ii) explains that under such conditions the environmental right in the Constitution of South Africa presents the justiciability for socio-economic rights explaining that:

> Courts can extract accountability, responsiveness and openness from the State by requiring it to justify its allocative choices in the light of the normative content and purposes of socio-economic rights. Where reasonable resource allocation decisions are required, courts can help ensure that the State directs its resources to socio-economic capability realisation at a systemic level.

Where resources are allocated to sufficiently realise capability needs, it becomes possible for the socio-economically disadvantaged members of our society to unlock their potential and choose to live meaningful lives. In this way, a society characterized by freedom, dignity and equality for all becomes a prospect contingent on an allocation of responsibility for such provisions (van der Berg, 2015). Figure 41 below depicts the strength of linkages between categories of ecosystem services and components of human well-being that are commonly encountered.

Understanding how dependence on ecosystem services influences constituents of well-being, it is possible to identify operational constraints that limit capabilities for people (particularly the poor) to equitably access these services to advance their well-being (Balmford and Bond, 2005; Haines-Young and Potschin, 2009; Daw *et al.*, 2011; Iniesta-Arandia *et al.*, 2014; Dawson and Martin, 2015). The linkages between ecosystem services and well-being are well articulated in the Millennium Ecosystem Assessment (MEA, 2005) and displayed in Figure 41 below. The figure includes indications of the extent to which it is possible for socioeconomic factors to mediate the linkages. Dawson and Martin (2015) and Dawson *et al.* (2016) have demonstrated how human well-being can be appraised together with ecosystem services by using evaluative concepts derived from the capabilities approach.

Figure 41: Linkages between ecosystem services and well-being (MEA, 2005, p. vi)



Polishchuk and Rauschmayer (2012) have analysed the applicability of the MEA framework in Figure 41 above to a capabilities conception of sustainable decision making. They argue that "merely showing a strong linkage between, say, the provisioning service of food and the basic materials for a good life on a general level is not enough for an evaluation of ecosystem-dependent well-being in a specific context" (Polishchuk and Rauschmayer, 2012, p. 105). They suggest this can be resolved by applying the concept of ecosystem services because it offers a way to illustrate the diversity of ways in which the provisioning, regulating and cultural ecosystems affect human well-being. This fits well with the decision making process of environmental assessment which has a long tradition of incorporating goods and services into the ecological considerations (Glasson *et al.*, 2012).

The feedback schema conceptualized in this section have highlighted the importance of the relationship between the life support systems, human capabilities and better decision making. It has demonstrated that the practitioner requires a broad, dynamic and abstract tool that is informed by many disciplines and is itself a multidisciplinary approach. Avoiding consequences of 'corrosive disadvantage' or instances of compromised capabilities can benefit the strong sustainability of decision making. Positively looking for ways in which developments can contribute towards conditions of 'fertile flourishing' and expanded capabilities should be the goal of the high functioning practitioner.

5.4 CONCLUSION: THEORETICAL DEVELOPMENT

Reflecting upon the findings in the cases and the potential consilience between EA and the CA, the research has provided an emergent theoretical framework that allows for the consideration of capabilities in the practice of environmental assessment. This research proposes the use of 'capability sufficiency' as an applicable concept for the practice of environmental assessment. Section 5.1.1 demonstrated that capability expansion can be conceptually applied to the public participation process of EA; and Section 5.1.2 demonstrated that the use of the capability concepts of 'thresholds', 'ceilings' and capability expansion afford the practical means for contextual interpretations and the application of 'sufficiency' to the practice. Extending the notion of capability expansion from public participation to the idea of choice in the practice of EA, Section 5.2 demonstrated how feedback loops can be integrated with an *ex-ante* capability evaluation. The emphasis of this approach is to increase choice and the freedoms to choose the kinds of environmental conditions that are reasoned to be valuable. The ethical imperative of guarding against the unjust arrangement of capability and choice curtailment is highlighted. The instrumental relationship between the selected capability probes used in this research and their combined impact on the lives of individuals is emphasised in order to elaborate the multidimensionality of a capability evaluation of the human well-being considerations in environmental assessment. Section 5.3 acknowledged and described a number of limitations and contingencies to the theoretical framework.

6 CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

In the field of environmental assessment, this research aims to enhance the assimilation of human development and well-being concerns in participatory environmental decision making through the development of a capabilities approach to the practice. The participatory focus accentuates the potential for decision influencing by stakeholders and participation support for stakeholders to contribute meaningfully in environmental assessment. The research targets the improved integration of *ex-ante* considerations of capabilities.

This final chapter provides the conclusions and recommendations of the research. It is structured into four main sections. Section 6.1 reflects on how the findings relate to the guidelines, regulations and policies for public participation in EA in South Africa. Recommendations are given that have implications for practice interpretations of the legal provisions of the South African National Environmental Management Act (RSA, Act No. 107 of 1998) participation requirements. Section 6.2 provides a tentative extension of the observations made from the cases studies used in this research to propose recommendations for best practice public participation. Section 6.3 recommends that the practice of EA is a suitable and useful testing ground for the application of the capabilities approach. It recommends that the CA can benefit from further and repeated engagement with the practice of EA in ways that can strengthen the capabilities approach. Recommendations are made for the research agenda of further engagement of the CA with the practice of environmental assessment. Finally, Section 6.4 reflects on the methodology used in this research and provides some recommendations for their future application to EA and CA research.

6.1 REGULATORY AND POLICY RECOMMENDATIONS FOR SOUTH AFRICA

This research proposes the use of the capabilities approach for equity considerations in the environmental assessment of projects, plans and policy analysis. The CA has recently received increased attention from policy makers most notably from the UNDP, UNESCO, various EU and European government agencies, NGOs and the World Bank (Gasper, 2008b). The policy analysis work of Dreze and Sen (2007) highlights how specific groups in society need to be identified for their potential vulnerability in order to better understand their inequality and thereby respond with more appropriate interventions. Gasper (2008b) highlights that the work of Sen and Dreze is foundational for extending policy analysis to the necessary disaggregated considerations of equality aspects of well-being such as age, literacy (especially female), community, physical security, environment, life expectancy, occupation, access to safe water and electricity, gender, mortality (especially child mortality), morbidity, nutrition, participation and governance. For the equity considerations of EIA

public participation, such an alternative approach should be welcomed for research that tests for the adequacy and implementation of projects, plans and policies.

This research proposes that a capabilities approach to environmental assessment in South Africa would provide for a greater sensitivity to context. It highlights the human development and well-being characteristics of the interested and affected parties, their participation instance and elicits the means and ends that they consider valuable. Participation inequalities are appropriately foregrounded. Furthermore, the research argues for a more nuanced and local description of sustainability through a contextually interpreted understanding of the means and ends of a proposed development when conceptualised from the perspective of choosing the kind of life or environmental future that one reasonably considers valuable.

The capacity support provisions in the NEMA intend to provide "the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation … [in EA]" (RSA Act No. 107 of 1998, Section 2(4) f). This research has shown how the capabilities approach can be applied to EA as a useful means to identify the obstacles to such opportunities, characterizes the capacity constraints, and provides an alternative and more nuanced understanding of what meaningful participation can entail. It highlights the degree of achievement or lack thereof and more appropriately reinterprets 'equal' participation to 'sufficient' participation without necessarily compromising procedural effectiveness.

This research recommends that participation policy and guideline development in South Africa need to consider the merits of the capabilities approach. The approach considers not just what is intended by the policy or guideline. The consequentialist and reflective perspective of the CA highlights what is realized in society. The current participation guidelines focus mainly on encoding best practice participation principles and applying them to the South African context (DEA&DP, 2011). Significant progress for South Africa has been made in this regard. However, the guidelines fall short of the responsibility and accountability that a capabilities approach demands concerning realized meaningful participation and the levels of support that would be required to achieve it. Feedback is required from practice for policy and guidelines that are informed by participation research that is cognisant of stakeholder capabilities for participation. Without reflectively considering what is actually achieved by the stakeholders, in light of the kinds of life they reasonably consider valuable, it is easy for naïve policymakers to assume that the best practice guidelines are sufficient to produce a participatory practice in EA that would attain the intentions of the principles of the policies. The distributional consequences of such policies will be inadequately considered as those stakeholders who face the most challenging and significant participation challenges are also those who will not be heard concerning participation support requirements or their autonomous environmental choices. Further, the current lack of accountability regarding support provisions will persist.

Amongst other potential barriers, policy and practice guidelines need to consider the following:

Excerpt from Table 6 (p. 81)

Barriers to participation (after Hartley and Wood, 2005)	**Barriers in the South African EA public participation context** (after Sowman *et al.*, 1995; Hughes, 1998; Rossouw and Wiseman, 2004; Scott and Oelofse, 2007; du Plessis, 2008; Murombo, 2008; de Wet and du Plessis, 2010; Kotze and du Plessis, 2010)
• Poor public knowledge of planning, legal and waste licensing issues • Poor provision of information • Poor access to legal advice • Mistrust of the waste industry • NIMBY syndrome • Failure to influence the decision making process • Poor execution of participation methods • Regulatory constraint.	• Authorization efficiency: emphasis on foreign direct investment, job creation & economic growth • Changes to the expert/elitist approach to EA • Reduced length of comment periods • Emerging participatory democracy • Slow environmental authorization • Poorly understood *Locus standi* • No guarantee of formal participation • Invisible stakeholders • Inadequate scientific knowledge • Lack of public capacity support, education & empowerment. • HIV/AIDS • Language challenges • Inadequate internet and email connectivity • Inadequate personal time for participation • Poverty and unemployment

This research proposes that a starting point for the South African policy maker is to consider how the decision making conditions in environmental assessment match up with a capabilities list such as those of Nielsen and Axelsen (2016) or Nussbaum (2000b). In doing so, the salient areas of stakeholder participation support are highlighted together with the need for the establishment of greater accountability for who is responsible for providing such support. It is beyond the scope of the recommendations here to elaborate an outline of what this would entail. Such a policy development needs to be constructed through participation, dialogue and discussion. The findings of this research however indicate that in addition to the ability and opportunity aspects of capability sufficiency, the identified systemic practice obstacles identified in Table 6 (p. 81) and in Table 31 (p. 157) should be considered for mitigation.

The CA suggests that the overriding objective of development is the expansion of human capabilities rather than economic growth. This implies that regulatory provisions and policy interventions need to target capabilities. This research demonstrates that expansion of participation capabilities can provide an instrumental expansion of capabilities through enhancing the capabilities of stakeholders to be more meaningfully involved in environmental assessment. It also provides a more balanced view of ‘the environment’ for practitioners and decision makers aiming to implement these regulations and policies. From the perspective of a capabilities approach ‘the environment’ includes the human development and well-being aspects that require that cognisance is taken of the values and reasons people hold regarding their future environment.

While growth may be necessary for development, it is not always sufficient. In broad terms it is possible to distinguish between 'growth mediated' and 'support led' development (Dreze and Sen, 1989; Sen, 1999). The former operates through rapid and broad-based economic growth, which facilitates the expansion of basic capabilities through higher employment, improved prosperity and better social services. The latter works primarily through proficient welfare programmes that support health, education and social security. Public action also plays an important role in supporting capabilities directly and providing political pressure for state intervention in times of crisis and hardship. For a developmental state like South Africa to achieve inclusive growth in future developments, the practice needs to integrate human capabilities in the evaluation of environmental policies and proposals.. In this regard a capabilities approach to environmental assessment will interrogate what is actually realized in people's lives. The expansions or constraints to live the kinds of lives people have good reasons to value and live should be the participatory feedback for considering the effectiveness of environmental regulations and policy.

6.2 BEST PRACTICE PUBLIC PARTICIPATION RECOMMENDATIONS

The Aarhus Convention (UNECE, 1998b) advocates for 'early and effective' participation (Hartley and Wood, 2005). However, the barriers to this type of meaningful participation that Hartley and Wood (2005) identify in the UK have been found in this research to also exist in South Africa. In addition, further contextual challenges are identified that relate to the developmental and sustainability context that are specific to the South African practice. This research concludes that the principles 'Communication', 'Fairness', 'Timing', 'Accessibility', 'Information provision', 'Influence on decision making', 'Competence', 'Interaction', 'Compromise' and 'Trust', of the Aarhus Convention serve the practice well as criteria with which to evaluate public participation procedures. This research has shown that when considered from a capabilities perspective they can further provide well-established grounds upon which salient capability related aspects can be identified. In addition, they can be well adapted and complement contextual challenges that are not confined to spatial or temporal boundaries.

The findings of this research motivate that a useful way of operationalizing the principles of the Aarhus Convention to EIA public participation is through the lens of the capability approach. This research has shown that a focus on capabilities provides a rich and complex understanding of what meaningful participation can entail in ways that integrate and align to the intention of the principles. This research has shown that participation capability 'sufficiency' is a useful way of evaluating and understanding participation instances from the perspective of an individual. It highlights the importance of such a fine grain evaluation when evaluating the process and deepens our understanding of the human development dimensions of 'effectiveness'. Participation capability

sufficiency also highlights the responsibility for capability support to stakeholders who face unfair or possibly unjust participatory arrangements.

A focus on capabilities underlines the view people hold of what they believe to be a good life. In this regard, 'environmental' deliberation is expanded to embrace the social, economic and ecological context rather than a narrowly defined biophysical notion. There are at least two ways the consilience of the capabilities approach with environmental assessment affords more appropriate schema for the practice of EA. Firstly, it aids in scoping what the pertinent issues are. By incorporating capabilities in the scoping considerations, the elimination process of what is or is not deliberated to be relevant, incorporates the stakeholder's formulations of the good in light of affected person's capabilities to live the type of existence that they esteem. This concerns the capabilities of ecological systems as well as individual's capabilities. Section 5.1 elaborates this notion as it relates to the minimally just conditions for participation and Section 5.2 as it pertains to the feedback of decision making on capabilities for enhanced environmental choices. Secondly, it offers schema for assimilating the socio-economic human development and well-being aspects in the evaluation, assessment and decision making processes. Through a discussion of integrating capabilities, the practitioner is better prepared to reflect on the human development and well-being impacts of proposed developments. The need for the deliberations to be informed by a bottom-up knowledge base necessitates a participatory foundation. This research proposes that this participatory foundation of a capabilities approach to environmental assessment should include decision shaping by stakeholders and decision support for the stakeholders.

6.3 ADVANCE OF THE CAPABILITIES APPROACH THROUGH APPLICATION TO THE PRACTICE OF ENVIRONMENTAL ASSESSMENT

This research has identified the shared foundations of equity and justice in public participation between EA and the CA. Complementary work has recently proposed possible means of applying the CA to both ecological and sustainability fields (Sen, 2004; Crabtree, 2013; Rauschmeyer and Lessmann, 2013; Gutwald et al., 2014; Peeters et al., 2014). The extension of the CA to adequately incorporate EA concepts of intergenerational justice (Gutwald et al., 2014), sustainability (Sen, 2004; Burger and Christen, 2011; Sen, 2013), sustainable development (Lessmann and Rauschmayer, 2013) and ecosystems goods and services (Griewald and Rauschmayer, 2013; Iniesta-Arandia et al., 2014; Peeters et al., 2014; Polishchuk and Rauschmayer, 2014) into the considerations of capabilities is a contemporary challenge for the approach. Greater engagement between the CA and environmental assessment practice could yield rich empirical, practice and institutional contexts for the refinement and testing of applied environmental innovation for the CA. Likewise, the potential benefit for environmental assessment is broader than the focus on sufficient public participation. The concept of

capabilities can hold value for at least two of the current discussions in the EA literature 1) determining significance, and 2) scoping social and economic considerations for enhanced 'integration' in impact assessments. Subsequent research could significantly add value to the practice of EA as well as the CA.

6.4 METHODOLOGICAL RECOMMENDATIONS

The four main methods selected for this research were applied to the cases as a combined evaluative package for public participation. They proved to be useful for eliciting aspects of participation that considered the individual participation capabilities of the responding stakeholders. The methodology focused on stakeholder capabilities and functionings as they were conceptualised in terms of participation capability aspects of opportunity, ability and constraints. This concluding section does not reiterate the limitations of each method nor the workability of how they were applied. This is provided elsewhere (Sections 3.4; 3.5; 3.6).

The identification of capability indicators needs to provide a distinction between capabilities and achievements (or functionings). Sen has convincingly maintained that determining a person's well-being should not only centre on the specific functioning she actually realises, but also on the things that she can achieve. The findings of this research corroborate the methodological guidance of Anand *et al*. (2009) that human capabilities can be measured with the aid of suitably designed statistical indicators. Items on Clark's list were selected in part due to their overlap with the validation research conducted by Anand *et al*. (2009) of many of Clark's functional capabilities. Their research verified many items on Clark's and Nussbaum's lists including 'Bodily Health', 'Bodily Integrity', 'Emotions', 'Practical Reason', 'Affiliation' and 'Control over one's environment' with controls of sex, demographics, personality and age. This research further corroborates and commends the work of Anand el at. (2007) that focuses on the questions of whether and how capabilities can be measured. They also use a survey with Likert scales for all items on Nussbaum's list. They demonstrate ways in which capability data can be analysed assisting the validation procedures in the methodology adopted by this research. Many of the more significant dimensions of capability can be measured but it is worth acknowledging that these capability indicators may be particularly closely related to satisfactions with particular areas of life that are not fully considered in this evaluation.

Corroborating the work of Anand and van Hees (2006), Anand et al. 2007 and Anand et al. (2009) this research demonstrates that, to a certain extent, capabilities can be measured. Further, it demonstrates the value of focussing on capabilities in evaluation when decision making needs to consider human agency, human development and well-being. The research confirms that it is possible to make statistically significant distinctions between different capabilities, that perceptions of others' capabilities are sometimes related to own capabilities and that achievements appear, in general, to be

related to corresponding capabilities. The research also confirms the work of Anand and van Hees (2006) wherein an examination of covariates suggests that satisfaction with capabilities might be negatively related to objective measures of opportunity.

The Report Analysis provides a hermeneutical base and context for the findings of the complementary empirical methods. The inclusion of capability probes in the evaluation of the Report Analyses (Method 1) identified capability related aspects that were, in varying degrees, described and mitigated for in the cases. The evaluation frame highlighted that there was a dearth of capability considerations in the EA reports of the case studies. This research recommends the inclusion of capability probes in the evaluation of reports. This would add value to the practice as it would challenge the practitioner to consider the relevant capability aspects in their report writing techniques and provide stakeholders with more appropriate capability grounded ways to frame the adequacy of their participation experience and the decision making discourse.

The inclusion of capability probes in the two Q-methods (Method 2 and Method 3) evaluated the social perspectives of the public participation experience and provided a normative ranking of what stakeholders consider to be priority functional capabilities. Method 2 provided the social perspectives of the participation experiences in the cases that were corroborated with other methods (Methods 1 and 4) to establish an overall evaluation of the participation experience. The Likert (Method) survey provided a means to test aspects of the participation experience and statistically evaluate the stability and validity of the applied concepts in each case and the aggregate sample population. The testing of capabilities and functionings aspects indicated insight into the participation experience that displayed relationships between capabilities, functionings and participation experience that are useful for the practitioner to consider.

The use of multiple methods in evaluating a public participation process in an environmental assessment allowed the analysis to consider the findings as they emerged from each method as well as how they contrasted or triangulated particular aspects. For case study research this is particularly important and protects against the many limitations of each method and has the potential to uncover trends that may be more generalizable. The focus on trends has been useful to the theory building exercise of this research. However, the further research agenda of a capabilities approach to environmental assessment could also be well served through multiple, longitudinal, thorough and in-depth single case study research where more reflective time and discussion can be given to the qualitative aspects of stakeholder's capabilities and functionings.

6.5 CONCLUSIONS

In the field of environmental assessment, this research aims to advance the integration of human development and well-being considerations in participatory environmental decision making. It does

this through the development of a capabilities approach to the practice. The capabilities approach is not proposed as a silver bullet for EA and it is anticipated that there will be a significant amount of discussion regarding its workability in the practice. This is not a new tool for impact assessment. This research calls for theoretical, institutional and practical learning from the discipline of the CA for the practice of EA. This may be more difficult to achieve than proposing a new tool (Sheate, 2012), however, such opportunities for innovation should not be lost for the EA community (Morrison-Saunders *et al.*, 2014).

The theoretical framework commends a conceptual tool for environmental practitioners and decision makers through enhancing the decision making considerations of human development and well-being in environmental assessment through developing a capabilities approach to the practice. In doing so, it firstly emphasises the effectiveness and equity imperatives of public participation and highlights the inclusion of appropriate social considerations in environmental assessment. Secondly, it proposes an outline how a capabilities approach to EA public participation can fit within the general practice of environmental assessment. Instead of setting a complete standard for equitable public participation, the CA ascertains a minimum participation condition, or 'threshold', that cannot be reasonably excluded. This research does not stipulate what the capability thresholds ought to be, but provides a framework and criteria for their determination. The empirical probes of 'opportunity', 'ability' and 'constraint' that are employed by this research are used to illustrate this. Threshold specification is proposed to be contextually determined at a project and local level by the professional participation facilitator. Such determinations should be cognisant of (a) biological and physical needs, (b) the fundamental interests of the human agent, and (c) the fundamental interests of a social being; that make up the three categories of an individual's capability sufficiency.

The emergent theoretical framework proposes an outline how a capabilities approach to EA public participation can fit the practice of environmental assessment. This is proposed through an extension of the capabilities focus to the *ex-ante* feedback effects of the EA decision making process on capabilities. It extends the EAPs contemplations to incorporate the realized impacts of EA decisions on the capabilities of existing and future generations. Their quality of choice to impact the moulding of decisions is posited to be proportionate to their available capabilities.

Focussing on capabilities highlights the opinion individual's hold of what they have good reason to constitute a good life. In this regard, the definition of 'environmental' considerations is extended to incorporate the social, economic and ecological context in contrast with a narrowly defined biophysical conception. The consilience of the capabilities approach with environmental assessment offers fitting schema in at least two ways. Firstly, it assists in scoping what the germane concerns are. By incorporating capabilities in the scoping contemplations, the purging process of what is or is not considered relevant, includes the stakeholder's constructions of the good in light of affected person's capabilities to live the type of life that they value. This applies to the capabilities of

individuals and the capabilities of ecological systems. This is elaborated in the theoretical framework in Section 5.1 as they relate to the minimally just settings for participation and Section 5.2 as they relate to the feedback of decision making on capabilities for improved environmental choice. Secondly, the consilience of the capabilities approach with environmental assessment offers an outline for incorporating the socio-economic human development and well-being aspects in the evaluation, assessment and decision making actions. Through dialogue of capabilities, the practitioner is better equipped to consider the human development and well-being impacts of developments. Deliberations need to be informed by a bottom-up information base and therefore requires participatory substance. This research proposes that this participatory foundation of a capabilities approach to environmental assessment should include decision shaping by stakeholders and decision support for the stakeholders.

Sen (1999b) has explained that the capability approach is not a general theory but as the name implies, an approach, a way of thinking. The goal is therefore not a unified theory for EA or for public participation but a contribution to better understanding of appropriate considerations for improved practice. The CA has potential to be included as a core part of the training for an assessment practitioner and integral to how the practitioner should apply his or her mind to each assessment. Evaluating participation from the perspective of the CA would require understanding of the stakeholders' reasons for wanting to influence the decision, as well as the extent to which realized influence feeds back to impact on their ability to live a life that they consider valuable; that is, to improve on their capabilities. This research has not specified what the capability thresholds should be, but provides an outline and criteria for their preliminary determination. It is anticipated that such decisions should include the robust consideration of increasing the social, economic and ecological freedoms that affected persons reasonably consider valuable and sustainable.

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APPENDICES

7.1 Method 1: Report Analysis

7.1.1 Report Analysis Part A Case Study Stakeholder Selection: Demographic Characteristics

PARK CASE: Demographic characteristics

Respondent ID	Resident	Representation	Age	Age Code	Gender	Sex Code	Ethnicity	Ethicity Code	Edu Code	Employment
PARK-001	1	4	54	4	M	2	B	1	4	Empl
PARK-002	1	8	48	3	F	1	B	1	4	Empl
PARK-003	1	4	53	4	M	2	B	1	3	S-Em
PARK-004	1	8	60	4	M	2	B	1	4	Empl
PARK-005	1	8	38	3	M	2	B	1	4	Empl
PARK-006	1	1	70	5	F	1	B	1	2	Ret
PARK-007	1	1	59	4	F	1	B	1	3	Empl
PARK-008	1	1	47	3	F	1	B	1	0	S-Em
PARK-009	1	1	53	4	F	1	B	1	4	Empl
PARK-010	1	1	40	3	F	1	B	1	4	S-Em
PARK-011	1	1	55	4	M	2	B	1	5	Empl
PARK-012	1	1	64	4	F	1	B	1	3	Seek
PARK-013	1	1	48	3	F	1	B	1	3	Empl
PARK-014	1	8	65	4	M	2	B	1	3	Empl
PARK-015	1	8	68	5	F	1	B	1	2	Ret
PARK-016	2	8	54	4	M	2	W	4	9	Empl
PARK-017	1	1	51	4	F	1	B	1	6	Empl
Total	17									

WIND CASE: Demographic characteristics

Respondent ID	Resident	Representation	Age	Age Code	Gender	Sex Code	Ethnicity	Ethicity Code	Edu Code	Employment
WIND-001	1	4	40	3	F	1	W	4	7	Empl
WIND-002	1	1	64	4	M	2	Bl	1	8	Empl
WIND-003	1	1	55	4	M	2	W	4	7	Empl
WIND-004	1	1	48	3	F	1	W	4	7	Empl
WIND-005	1	1	61	4	M	2	W	4	6	Empl
WIND-006	1	4	39	3	M	2	W	4	7	Empl
WIND-007	1	4	54	4	F	1	W	4	8	Empl
WIND-008	1	1	50	3	F	1	W	4	7	Empl
WIND-009	1	4	51	4	M	2	W	4	7	Empl
WIND-010	1	1	67	5	M	2	W	4	10	Ret
WIND-011	1	1	44	3	M	2	W	4	8	Empl
WIND-012	1	1	46	3	F	1	W	4	7	Empl
WIND-013	1	1	64	4	M	2	W	4	8	S-Em
WIND-014	1	4	58	4	M	2	W	4	8	Empl
WIND-015	1	1	60	4	M	2	W	4	9	Empl
WIND-016	1	1	64	4	M	2	W	4	8	Ret
WIND-017	1	1	56	4	M	2	W	4	7	Empl
WIND-018	1	1	50	3	F	1	W	4	7	Empl
WIND-019	1	9	40	3	F	1	Bl	1	7	Empl
WIND-020	1	1	38	3	F	1	Bl	1	7	Empl
Total	20									

MINE CASE: Demographic characteristics

Respondent ID	Resident	Representation	Age	Age Code	Gender	Sex Code	Ethnicity	Ethicity Code	Edu Code	Employment
MINE-001	1	4	45	3	F	1	W	4	7	Empl
MINE-002	2	8	37	3	F	1	W	4	6	Empl
MINE-003	1	1	56	4	M	2	W	4	7	Empl
MINE-004	1	1	61	4	M	2	C	2	8	Empl
MINE-005	2	8	48	3	M	2	W	4	7	Empl
MINE-006	2	8	51	4	F	1	W	4	7	Empl
MINE-007	2	8	38	3	F	1	W	4	6	Empl
MINE-008	1	1	64	4	M	2	W	4	7	Ret
MINE-009	1	8	71	5	M	2	W	4	6	Ret
MINE-010	2	7	44	3	M	2	W	4	7	Empl
MINE-011	1	1	66	5	M	2	W	4	5	Empl
MINE-012	1	1	62	4	M	2	W	4	7	Empl
MINE-013	1	1	71	5	M	2	W	4	7	Ret
MINE-014	1	1	58	4	F	1	W	4	6	S-Em
MINE-015	1	4	69	5	F	1	W	4	7	Ret
MINE-016	1	4	51	4	M	2	W	4	7	Empl
MINE-017	1	8	67	5	M	2	B	1	8	S-Em
MINE-018	1	1	44	3	F	1	W	4	7	Empl
MINE-019	2	3	56	4	M	2	W	4	7	Empl
MINE-020	2	1	60	4	M	2	B	1	6	Empl
MINE-021	1	7	51	4	M	2	W	4	7	Empl
MINE-022	1	1	63	4	M	2	W	4	8	Empl
MINE-023	1	1	73	6	M	2	W	4	7	Ret
MINE-024	1	1	37	3	M	2	W	4	7	Empl
MINE-025	1	1	59	4	M	2	C	2	6	Empl
MINE-026	1	1	67	5	M	2	W	4	7	Ret
MINE-027	1	1	55	4	M	2	C	2	7	Empl
MINE-028	1	1	60	4	M	2	W	4	6	Empl
MINE-029	1	8	49	3	F	1	W	4	7	Empl
MINE-030	1	1	57	4	M	2	W	4	7	Empl
MINE-031	1	1	63	4	M	2	W	4	7	Ret
Total	31									

GAS CASE: Demographic characteristics

Respondent ID	Resident	Representation	Age	Age Code	Gender	Sex Code	Ethnicity	Ethicity Code	Edu Code	Employment
GAS-001	2	1	62	4	M	2	Wh	4	9	Ret
GAS-002	2	1	67	5	M	2	Wh	4	7	Ret
GAS-003	2	3	66	5	M	2	Wh	4	7	Ret
GAS-004	2	6	64	4	M	2	Wh	4	9	Ret
GAS-005	2	1	54	4	F	1	Wh	4	8	Emp
GAS-006	2	1	64	4	M	2	Wh	4	8	Ret
GAS-007	2	1	42	3	F	1	Wh	4	7	Emp
GAS-008	2	2	64	4	M	2	Wh	4	9	S-Em
GAS-009	1	8	60	4	M	2	Wh	4	7	Emp
GAS-010	2	1	41	3	M	2	Wh	4	8	Emp
GAS-011	2	2	40	3	M	2	Wh	4	8	Emp
GAS-012	2	1	45	3	M	2	Wh	4	7	Emp
GAS-013	2	2	58	4	M	2	Wh	4	7	Emp
GAS-014	2	1	62	4	M	2	Wh	4	7	S-Em
GAS-015	2	1	66	5	F	1	Wh	4	7	Ret
GAS-016	2	3	54	4	M	2	Wh	4	7	S-Em
GAS-017	1	1	48	3	M	2	Wh	4	7	Emp
GAS-018	2	3	55	4	M	2	Wh	4	8	Emp
GAS-019	1	6	71	6	M	2	Wh	4	7	Ret
GAS-020	1	2	68	5	M	2	Wh	4	7	Ret
GAS-021	2	1	64	4	M	2	Wh	4	8	Ret
GAS-022	1	1	68	5	M	2	Wh	4	8	Ret
GAS-023	1	8	55	4	M	2	Wh	4	7	Emp
GAS-024	2	6	63	4	M	2	Wh	4	9	Ret
GAS-025	2	1	61	4	M	2	Wh	4	5	Emp
GAS-026	1	8	58	4	M	2	Wh	4	7	Emp
GAS-027	2	1	73	6	M	2	Wh	4	8	Ret
GAS-028	1	8	49	3	F	1	Wh	4	7	Emp
GAS-029	1	4	45	3	M	2	Wh	4	7	Emp
GAS-030	1	2	26	2	F	1	Wh	4	5	Emp
GAS-031	1	8	31	2	F	1	Bl	1	3	Uem
GAS-032	1	8	47	3	M	2	Wh	4	7	Emp
GAS-033	1	1	48	3	F	1	Wh	4	8	Emp
GAS-034	1	1	33	2	M	2	Col	2	3	Uem
GAS-035	1	1	58	4	M	2	Wh	4	7	S-Em
GAS-036	1	1	34	2	M	2	Wh	4	7	Emp
GAS-037	1	1	57	4	M	2	Wh	4	6	Emp
GAS-038	1	1	61	4	F	1	Wh	4	7	Emp
GAS-039	1	1	27	2	M	2	Bl	1	3	JS
GAS-040	1	1	63	4	M	2	Bl	1	2	DJS
GAS-041	1	1	57	4	M	2	Wh	4	7	Emp
GAS-042	1	1	62	4	M	2	Wh	4	7	Emp

GAS-043	1	1	54	4	M	2	Wh	4	8	Emp
GAS-044	1	1	49	3	F	1	Bl	1	5	DJS
GAS-045	1	1	59	4	M	2	Col	2	5	Emp
GAS-046	1	15	43	3	F	1	Col	2	4	Emp
GAS-047	1	15	64	4	M	2	Col	2	3	Uem
GAS-048	1	1	61	4	M	2	Bl	1	2	Uem
GAS-049	1	1	58	4	M	2	Bl	1	3	JS
GAS-050	1	1	66	5	F	1	Wh	4	6	Emp
GAS-051	1	1	42	3	M	2	Wh	4	6	Emp
GAS-052	1	1	50	3	M	2	Bl	1	3	DJS
GAS-053	1	15	38	3	F	1	Col	2	2	Emp
GAS-054	1	1	49	3	M	2	Bl	1	3	Uem
GAS-055	1	1	51	4	M	2	Wh	4	7	Ret
GAS-056	1	1	68	5	F	1	Col	2	2	Emp
GAS-057	1	1	51	4	M	2	Col	2	3	Emp
GAS-058	1	1	68	5	M	2	Col	2	5	Ret
GAS-059	1	1	62	4	M	2	Col	2	3	Emp
GAS-060	1	1	49	3	M	2	Col	2	4	DJS
GAS-061	1	1	59	4	M	2	Wh	4	8	S-Em
Total	61									

7.1.2 Report Analysis Part A: Representivity ratios of stakeholder selection for each case

Stakeholder Selection Criterion	Total RI&APs on Data Base	As % of total RI&APs	Total "ACTIVE" RI&APs	Active RI&APs as % of Total RI&APs criterion	Number RI&APs Selected Likert	Likert selection as % of total ACTIVE RI&APs on data base	Likert selection as % of total RI&APs on data base	Number respondents selected EA PP Q Sort	Number respondents selected fC Q Sort
PARK: RI&APs	**91**	100%	**73**	80%	**17**	23%	19%	**13**	**13**
Residence									
Community resident RI&APs	46	51%	46	63%	**16**	**35%**	35%	**13**	**13**
Total non-community RSA resident RI&APs	27	30%	27	37%	**1**	**4%**	4%	**0**	**0**
Total[1]	73		73		17			13	13
Demographics									
Total Female	34	37%	34	47%	**10**	**29%**	29%	**8**	**8**
Total Male	39	43%	39	53%	**7**	**18%**	18%	**5**	**5**
Total	73		73		17			13	13
Ethnicity									
Total Black African	40	44%	39	53%	**16**	**41%**	40%	**13**	**13**
Total Coloured	11	12%	10	14%	**1**	**10%**	9%	**0**	**0**
Total White	22	24%	24	33%	**0**	**0%**	0%	**0**	**0**
Total	73		73		17			13	13

[1] Out of a total of 91 stakeholders in the data base, 73 RI&APs are accounted for regarding residence criteria. There are therefore 18 stakeholders for whom it was not possible to attribute residence criteria. This is considered missing data and applies to all the cases (37 missing in GAS; 45 missing in WIND, 86 missing in MINE).

Stakeholder Selection Criterion	Total RI&APs on Data Base	As % of total RI&APs	Total "ACTIVE" RI&APs	Active RI&APs as % of Total RI&APs criterion	Number RI&APs Selected Likert	Likert selection as % of total ACTIVE RI&APs on data base	Likert selection as % of total RI&APs on data base	Number respondents selected EA PP Q Sort	Number respondents selected fC Q Sort
GAS: I&APs	**1232**	100%	**343**	28%	**61**	18%	5%	**13**	**13**
Residence									
Community resident I&APs	870	73%	183	53%	**41**	**22%**	3%	**10**	**10**
Total non-community RSA resident I&APs	316	26%	160	47%	**20**	**13%**	2%	**3**	**3**
Total International resident I&APs	9	1%	0	0%	**0**	**0%**	0%	**0**	**0**
Total	1195	100%	343		**61**			**13**	**13**
Demographics									
Total Female	378	32%	66	19%	**13**	**20%**	1%	**5**	**5**
Total Male	799	68%	277	81%	**48**	**17%**	4%	**8**	**8**
Total	1177	100%	343		**61**				
Ethnicity									
Total Black African	281	24%	9	3%	**8**	**89%**	1%	**3**	**3**
Total Coloured	247	21%	13	4%	**10**	**77%**	1%	**4**	**4**
Total Indian/Asian	5	0%	1	0%	**0**	**0%**	0%	**0**	**0**
Total White	644	55%	320	93%	**43**	**13%**	3%	**6**	**6**
Total	1177	100%	343		**61**			**13**	**13**

Stakeholder Selection Criterion	Total RI&APs on Data Base	As % of total RI&APs	Total "ACTIVE" RI&APs	Active RI&APs as % of Total RI&APs criterion	Number RI&APs Selected Likert	Likert selection as % of total ACTIVE RI&APs on data base	Likert selection as % of total RI&APs on data base	Number respondents selected EA PP Q Sort	Number respondents selected fC Q Sort
WIND: RI&APs	**274**	100%	**207**	76%	**20**	10%	7%	**13**	**13**
Residence									
Community resident I&APs	195	85%	173	84%	**20**	**12%**	7%	**13**	**13**
Total non-community RSA resident I&APs	34	15%	34	16%	**0**	**0%**	0%	**0**	**0**
Total	**229**	100%	207		**20**			**13**	**13**
Demographics									
Total Female	71	30%	38	25%	**8**	**21%**	3%	**5**	**5**
Total Male	164	70%	115	75%	**12**	**10%**	4%	**8**	**8**
Total	**235**	100%	153		**20**			**13**	**13**
Ethnicity									
Total Black African	25	11%	9	5%	**3**	**33%**	1%	**3**	**3**
Total Coloured	12	5%	6	3%	**0**	**0%**	0%	**0**	**0**
Total White	190	84%	176	92%	**17**	**10%**	6%	**10**	**10**
Total	**227**	100%	191		**20**			**13**	**13**

Stakeholder Selection Criterion	Total RI&APs on Data Base	As % of total RI&APs	Total "ACTIVE" RI&APs	Active RI&APs as % of Total RI&APs criterion	Number RI&APs Selected Likert	Likert selection as % of total ACTIVE RI&APs on data base	Likert selection as % of total RI&APs on data base	Number respondents selected EA PP Q Sort	Number respondents selected fC Q Sort
MINE: RI&APs	**1672**	100%	**170**	10%	**31**	18%	2%	**13**	**13**
Residence									
Community resident RI&APs	371	23%	130	76%	**24**	**18%**	6%	**10**	**10**
Total non-community RSA resident RI&APs	1215	77%	40	24%	**7**	**18%**	1%	**3**	**3**
Total	1586		170		**31**				
Demographics									
Total Female	530	33%	62	36%	**8**	**13%**	2%	**4**	**4**
Total Male	1056	67%	108	64%	**23**	**21%**	2%	**9**	**9**
Total	1586		170		**31**			**13**	**13**
Ethnicity									
Total Black African	160	10%	20	12%	**2**	**10%**	1%	**2**	**2**
Total Coloured	46	3%	18	11%	**3**	**17%**	7%	**2**	**2**
Total White	1380	87%	132	78%	**26**	**20%**	2%	**9**	**9**
Total	1586		170		**31**			**13**	**13**

Stakeholder Selection Criterion	Total RI&APs on Data Base	As % of total RI&APs	Total "ACTIVE" RI&APs	Active RI&APs as % of Total RI&APs criterion	Number RI&APs Selected Likert	Likert selection as % of total ACTIVE RI&APs on data base	Likert selection as % of total RI&APs on data base	Number respondents selected EA PP Q Sort	Number respondents selected fC Q Sort
REDZ: RI&APs	**65**	100%	**62**	95%	**26**	42%	40%	**13**	**13**
Residence									
Community resident RI&APs	34	52%	34	55%	**20**	**59%**	59%	**10**	**10**
Total non-community RSA resident RI&APs	31	48%	28	45%	**6**	**21%**	19%	**3**	**3**
Total	65		62		26			13	13
Demographics									
Total Female	30	46%	11	18%	**10**	**91%**	33%	**6**	**6**
Total Male	35	54%	51	82%	**16**	**31%**	46%	**7**	**7**
Total	65		62		26			13	13
Ethnicity									
Total Black African	8	12%	5	8%	**2**	**40%**	25%	**2**	**2**
Total Coloured	1	2%	1	2%	**1**	**100%**	100%	**1**	**1**
Total White	56	86%	56	90%	**23**	**41%**	41%	**10**	**10**
Total	65		62		26			13	13

7.1.3 Case Study 1: Report Analysis PARK

Abbreviations used in the report analysis tables to follow:

ANR Air Quality Specialist Report
ASR Avifaunal Specialist Report
BA Basic Assessment Report – the minimal environmental assessment required in South Africa
BoA Botanical Specialist Report
C&R Comments and Responses Report from stakeholders
EIA Environmental Impact Assessment Report – the substantial environmental assessment required in South Africa
EMP Environmental Management Plan
FWR Fresh Water Specialist Report
HSR Heritage Specialist Report
MM Meeting minutes (in SEA)
NSR Noise Specialist Report
PM1 Public meeting (Number 1: SEA)
SEA Strategic Environmental Assessment
SES Socioeconomic Specialist Study
SR Scoping Report. The initial environmental report prior to and required by an EIA in South Africa
TSR Traffic Study Specialist Report
VSR Visual Specialist Report

7.1.3.1 Case Study 1 Report Analysis Part B: Consideration of 'barriers' to participation in the EIA reports

Case Study 1: PARK BA Report Evaluation																		
Unclear [0]	Never [1]	Superficially [2]	Occasionally [3]	In detail [4]	Substantially [5]	**'Barrier' mentioned in report in relation to development**			**'Barrier' identified by the EAP to be not relevant to public participation**			**'Barrier' identified and considered relevant to public participation**			**'Barrier' discussed in report**			**'Barrier' appropriately addressed (mitigation, support provisions etc.)**			Integrated with EIA	Integrated with EMP
Barrier to participation																							
Poor public knowledge of planning legal and licensing issues.						BA [1]	BoA [1]	FWR [1]	BA []	BoA []	FWR []	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]			
						C&R [1]	EMP [1]		C&R []	EMP []		C&R [1]	EMP [1]		C&R [1]	EMP [1]		C&R [1]	EMP [1]		BA [1]	EMP [1]
No report mentions the challenge associated with difficulties around public knowledge of planning legal and licensing issues. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Some stakeholders base their arguments on a sound understanding of their constitutional rights and the relevant regulations governing riparian and urban developments.																							
Poor provision of information.						BA [3]	BoA [1]	FWR [1]	BA []	BoA []	FWR []	BA [3]	BoA [1]	FWR [1]	BA [3]	BoA [1]	FWR [1]	BA [3]	BoA [1]	FWR [1]	BA [3]	EMP [3]	

	C&R [4]	EMP [3]		C&R []	EMP []		C&R [3]	EMP [3]		C&R [3]	EMP [3]		C&R [3]	EMP [3]			
The C&R report discusses the adequacy of information provision by the process in detail. The BA and EMP occasionally refer to difficulties around adequate information provision as it relates to stakeholder understanding of the project and involvement in the EMP mitigation strategies. Some stakeholders base some of their reasons for inclusion of their input into the project design based on the need for a more collaborative and comprehensive perspective.																	
Poor access to legal advice.	BA [1]	BoA [1]	FWR [1]	BA []	BoA []	FWR []	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]		
	C&R [1]	EMP [1]		C&R []	EMP []		C&R [1]	EMP [1]		C&R [1]	EMP [1]		C&R [1]	EMP [1]		BA [1]	EMP [1]
No report mentions the challenge associated with difficulties around access to legal advice. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Some stakeholders base their arguments on a sound understanding of the their constitutional rights and the relevant regulations governing riparian and urban developments.																	
Mistrust of the industry.	BA [1]	BoA [1]	FWR [1]	BA []	BoA []	FWR []	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]		
	C&R [1]	EMP [1]		C&R []	EMP []		C&R [1]	EMP [1]		C&R [1]	EMP [1]		C&R [1]	EMP [1]		BA [1]	EMP [1]
No report mentions the challenge associated with difficulties around mistrust of the industry. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Stakeholder input into the design and the discussions reflect a collaborative atmosphere.																	
NIMBY syndrome.	BA [1]	BoA [1]	FWR [1]	BA []	BoA []	FWR []	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]		
	C&R [1]	EMP [1]		C&R []	EMP []		C&R [1]	EMP [1]		C&R [1]	EMP [1]		C&R [1]	EMP [1]		BA [1]	EMP [1]
No report mentions the challenge associated with difficulties around stakeholder influence on decision making. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. No stakeholders are recorded in the reports indicating NIMBY aspects affecting their participation experience.																	
Failure to influence the decision making process.	BA [1]	BoA [1]	FWR [1]	BA []	BoA []	FWR []	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]		
	C&R [1]	EMP [1]		C&R []	EMP []		C&R [1]	EMP [1]		C&R [1]	EMP [1]		C&R [1]	EMP [1]		BA [1]	EMP [1]
No report mentions the challenge associated with difficulties of a NIMBY syndrome. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. No stakeholders are recorded in the reports regarding frustrations or failure to influence the decision making affecting their participation experience.																	
Poor execution of participation methods.	BA [1]	BoA [1]	FWR [1]	BA []	BoA []	FWR []	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]		
	C&R [1]	EMP [1]		C&R []	EMP []		C&R [1]	EMP [1]		C&R [1]	EMP [1]		C&R [1]	EMP [1]		BA [1]	EMP [1]
No report mentions the challenge associated with difficulties around execution of participation methods. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. No stakeholders are recorded in the reports asking for changes to, or additional, participatory methods affecting their participation experience.																	
Regulatory constraints	BA [1]	BoA [1]	FWR [1]	BA []	BoA []	FWR []	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]		
	C&R [1]	EMP [1]		C&R []	EMP []		C&R [1]	EMP [1]		C&R [1]	EMP [1]		C&R [1]	EMP [1]		BA [1]	EMP [1]
No report mentions the challenge associated with difficulties around execution of participation methods. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Some stakeholders base their arguments on a sound understanding of the their constitutional rights and the relevant regulations governing riparian and urban developments.																	
Authorization efficiency.	BA [3]	BoA [1]	FWR [1]	BA []	BoA []	FWR []	BA [3]	BoA [1]	FWR [1]	BA [3]	BoA [1]	FWR [1]	BA [3]	BoA [1]	FWR [1]		
	C&R [4]	EMP [4]		C&R []	EMP []		C&R [4]	EMP [4]		C&R [4]	EMP [4]		C&R [4]	EMP [4]		BA [3]	EMP [4
There is a strong emphasis on the need for employment, job creation and stimulating economic growth in the surrounding community of the urban informal settlement. The involvement of the poor in the decision making process was integrated into the public participation process through weekly community meetings that were open to the local residents and who where then represented in the process by the NGO the Environmental Monitoring Group. The EMP follows through on the recommendations in the BA in implementing unskilled and semi-skilled jobs for the local community in the maintenance of the park. Many local community stakeholders volunteered ideas for how the project could better facilitate the communities vision for economic opportunities and job creation.																	
Expert/elitist approach to EA.	BA [1]	BoA [1]	FWR [1]	BA []	BoA []	FWR []	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]		
	C&R [1]	EMP [1]		C&R []	EMP []		C&R [1]	EMP [1]		C&R [1]	EMP [1]		C&R [1]	EMP [1]		BA [1]	EMP [1]
No report mentions the challenge associated with difficulties around stakeholder influence on decision making. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. No stakeholders are recorded in the reports as having expert/elitist approach complaints affecting their participation experience.																	
Length of comment periods.	BA [1]	BoA [1]	FWR [1]	BA []	BoA []	FWR []	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]		
	C&R [1]	EMP [1]		C&R []	EMP []		C&R [1]	EMP [1]		C&R [1]	EMP [1]		C&R [1]	EMP [1]		BA [1]	EMP [1]
No report mentions the challenge associated with difficulties around an expert/elitist approach to EA. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. No stakeholders are recorded in the reports with complaints regarding the length of the comment periods affecting their participation experience.																	
Emerging participatory democracy.	BA [1]	BoA [1]	FWR [1]	BA []	BoA []	FWR []	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]		
	C&R [1]	EMP [1]		C&R []	EMP []		C&R [1]	EMP [1]		C&R [1]	EMP [1]		C&R [1]	EMP [1]		BA [1]	EMP [1]
No report mentions the challenge associated with difficulties around stakeholder influence on decision making. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. No complaints are made in the reports regarding challenges arising from participatory democracy affecting their participation experience. Participation in the decision making process was integrated into the public participation process through weekly community meetings that were open to the local residents and who where then represented in the process by the NGO the Environmental Monitoring Group.																	
Poorly understood *Locus standi*	BA [1]	BoA [1]	FWR [1]	BA []	BoA []	FWR []	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]		
	C&R [1]	EMP [1]		C&R []	EMP []		C&R [1]	EMP [1]		C&R [1]	EMP [1]		C&R [1]	EMP [1]		BA [1]	EMP [1]
No report mentions the challenge associated with difficulties around an emerging participatory democracy. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned																	

nor integrated in any report. No stakeholders are recorded in the reports with complaints regarding *Locus standi* affecting their participation experience.																	
No guarantee of formal participation.	BA [1]	BoA [1]	FWR [1]	BA []	BoA []	FWR []	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]		
	C&R [1]	EMP [1]		C&R []	EMP []		C&R [1]	EMP [1]		C&R [1]	EMP [1]		C&R [1]	EMP [1]		BA [1]	EMP [1]
No report mentions the challenge associated with difficulties around guarantees of formal participation. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. No stakeholders are recorded in the reports with complaints regarding guarantees of formal participation affecting their participation experience.																	
'Invisible' stakeholders.	BA [1]	BoA [1]	FWR [1]	BA []	BoA []	FWR []	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]		
	C&R [1]	EMP [1]		C&R []	EMP []		C&R [1]	EMP [1]		C&R [1]	EMP [1]		C&R [1]	EMP [1]		BA [1]	EMP [1]
No report mentions the challenge associated with difficulties around 'invisible' stakeholders. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Despite the socio-economic profile of the local community no stakeholders are recorded in the reports with complaints regarding 'invisible' stakeholders affecting their participation experience.																	
Inadequate scientific knowledge	BA [2]	BoA [2]	FWR [2]	BA []	BoA []	FWR []	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]		
	C&R [1]	EMP [1]		C&R []	EMP []		C&R [1]	EMP [1]		C&R [1]	EMP [1]		C&R [1]	EMP [1]		BA [1]	EMP [1]
Although challenges associated with the scientific nature of the reports is raised in the BA, the BoA and the FWR, the reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. No stakeholders are recorded in the reports with complaints regarding inadequate scientific knowledge affecting their participation experience.																	
Lack of public capacity support, education & empowerment for participation.	BA [2]	BoA [2]	FWR [2]	BA []	BoA []	FWR []	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]		
	C&R [1]	EMP []		C&R []	EMP []		C&R [1]	EMP [1]		C&R [1]	EMP [1]		C&R [1]	EMP [1]		BA [1]	EMP [1]
Although challenges associated with public capacity support, education & empowerment for participation is raised in the BA, the BoA and the FWR, the reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. However, he involvement of the poor in the decision making process was integrated into the public participation process through weekly community meetings that were open to the local residents and who where then represented in the process by the NGO the Environmental Monitoring Group. The Environmental Monitoring Group would explain the reports in a pedagogically appropriate way, using colloquial and appropriate language and provided a forum for questions regarding the project that ran parallel to the BA public participation and informed the decision making. No stakeholders are recorded in the reports to asking for, or citing, regulatory expectations for capacity support, education & empowerment for participation.																	
Inappropriate language used.	BA [1]	BoA [1]	FWR [1]	BA []	BoA []	FWR []	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]		
	C&R [1]	EMP [1]		C&R []	EMP []		C&R [1]	EMP [1]		C&R [1]	EMP [1]		C&R [1]	EMP [1]		BA [1]	EMP [1]
No report mentions the challenge associated with difficulties around appropriate language used. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. However, he involvement of the poor in the decision making process was integrated into the public participation process through weekly community meetings that were open to the local residents and who where then represented in the process by the NGO the Environmental Monitoring Group. The Environmental Monitoring Group would explain the reports in colloquial and appropriate language and provide a forum for questions regarding the project.																	
Other Aspects:																	
HIV/AIDS.	BA [1]	BoA [1]	FWR [1]	BA []	BoA []	FWR []	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]		
	C&R [1]	EMP [1]		C&R []	EMP []		C&R [1]	EMP [1]		C&R [1]	EMP [1]		C&R [1]	EMP [1]		BA [1]	EMP [1]
No report mentions the challenge associated with difficulties around stakeholder influence on decision making. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. No stakeholders are recorded in the reports with complaints regarding HIV/AIDS affecting their participation experience.																	
Inadequate internet and email connectivity.	BA [1]	BoA [1]	FWR [1]	BA []	BoA []	FWR []	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]		
	C&R [1]	EMP [1]		C&R []	EMP []		C&R [1]	EMP [1]		C&R [1]	EMP [1]		C&R [1]	EMP [1]		BA [1]	EMP [1]
No report mentions the challenge associated with difficulties around HIV/AIDS. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. No stakeholders are recorded in the reports with complaints regarding internet and email connectivity affecting their participation experience.																	
Personal time for participation.	BA [2]	BoA [2]	FWR [2]	BA []	BoA []	FWR []	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]		
	C&R [1]	EMP [1]		C&R []	EMP []		C&R [1]	EMP [1]		C&R [1]	EMP [1]		C&R [1]	EMP [1]		BA [1]	EMP [1]
Although challenges associated with time for participation is raised in the BA, the BoA and the FWR, the reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. No stakeholders are recorded in the reports with complaints regarding time for participation affecting their participation experience.																	
Poverty and Unemployment	BA [4]	BoA [1]	FWR [1]	BA []	BoA []	FWR []	BA []	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]	BA [1]	BoA [1]	FWR [1]		
	C&R [4]	EMP [4]		C&R []	EMP []		C&R [4]	EMP [4]		C&R [4]	EMP [4]		C&R [4]	EMP [4]		BA [1]	EMP [4]
There is a strong emphasis on the need for employment, job creation and stimulating economic growth in the surrounding community of the urban informal settlement. The involvement of the poor in the decision making process was integrated into the public participation process through weekly community meetings that were open to the local residents and who were then represented in the process by the NGO the Environmental Monitoring Group. The EMP follows through on the recommendations in the BA in implementing unskilled and semi-skilled jobs for the local community in the maintenance of the park.																	

7.1.3.2 Case Study 1 Report Analysis Part C: Articulations of 'functional capabilities' in the PARK EIA reports

'Functional Capabilities' (Clark, 2003: 186)		Report	Emphasis Unsure [0], Never [1], Superficially [2] Occasionally [3], In detail [4] Substantially [5]	Quote from Report (example)
1	Jobs	BA, C&R	In detail [4]	"The development would provide the residents of Khayelitsha and visitors […] temporary and permanent types of job creation as well as a sustainable urban environment. "Job creation during both the construction and operational phases would have a positive impact on the local community. While more temporary jobs will be created during the construction phase, the impacts of the permanent employment opportunities during the operation of the park are just as significant. Although the significance of employment opportunities is assessed to be low, it should be realised that any form of employment is welcomed in the area, which experiences high levels of unemployment". "61% of the labour force (aged 15 to 64) is employed" "Construction Phase: 60 short term jobs (unskilled labour) (estimate), Operation Phase: 25 long term jobs (semi-skilled to skilled) (estimate)"
2	Access to clean water and sanitation		In detail [4]	"Most of the wetlands in the PARK were assessed as Class A/B, in terms of their condition, which is indicative of relatively natural wetlands in fairly good condition." "In Ward 97 […] the majority of households (72%) live in formal dwellings and 95% of households have access to piped water in their dwelling or inside their yard. Nearly all households (95%) have access to a flush toilet connected to the public sewer system and 97% of households have their refuse removed at least once a week". "In Ward 93 […] a relatively low number of households live in formal dwellings (38%) while 62% of households have access to piped water in their dwelling or inside their yard. A large percentage of households (70%) have access to a flush toilet connected to the public sewer system while 75% of households have their refuse removed at least once a week." "The development would also aim to improve the water quality of the wetland system". "The removal of polluted grey water and litter from the stormwater systems flowing into the wetland would assist in drastically improving the quality of the water in the area. This would have a positive impact on the Kuils River ecosystem downstream". "Both Alternatives 1 and 2 would result in water quality improvements through the refurbishment of the two existing stormwater outlets, which would include sediment/litter traps and a low flow connection into the sewer system". "The education drive can also help with the other negative human impact e.g. using the wetlands as toilets. The Council must do more to provide waterborne toilet facilities to the people."
3	Housing and shelter	BA, EMP	In detail [4]	"In Ward 97 the 2011 population of Ward 97 was 28 529, an increase of 28% since 2001, and the number of households was 7 655, an increase of 47% since 2001. […] the majority of households (72%) live in formal dwellings and 95% of households have access to piped water in their dwelling or inside their yard". "In Ward 93 the 2011 population of Ward 93 was 31 217, a decrease of 1% since 2001, and the number of households was 9 670, an increase of 2% since 2001. The average household size has declined slightly from 3.33 to 3.23 in the 10 years since the last Census". "As the site is not suitable for the development of housing, the proposal to formalise the wetland area can thus be seen to be a positive initiative, resulting in both a social and biophysical improvement and upliftment of the area". "The OM must monitor and ensure that no informal housing or over-nighting occurs within the PARK. When observed it must be addressed without delay. The OM shall contact the CoCT's Anti Land Invasion Unit."
4	Family and friends	BA	Occasionally [3]	"There is a profound lack of open space and natural areas which are safe for the community to make use of. Parks provide a space where people can satisfy their need for rejuvenation and break from the demands of a challenging urban lifestyle. It is in this relaxed state that the concept of family and community building and social integration are most likely to occur"
5	Personal safety and physical security	BA	In detail [4]	"There is a profound lack of open space and natural areas which are safe for the community to make use of." "The development would have a positive impact on the surrounding community by means of providing the community with access to safe recreational areas."
6	An education	BA	Superficially [2]	"The information centre would also provide educational information about the wetland and environment, thus providing a much needed point for the dissemination of information to the local community" "The proposed facilities will have a value in providing environmental education facilities and has the potential to engender a more positive attitude to biodiversity and environmental issues by the local community"
7	Happiness		Never [1]	
8	Good health	BA	Occasionally [3]	"This measure should also reduce the human health risks associated with the ongoing exposure of the local community, especially children, to river water through full-contact recreation". "Children from the surrounding areas swim in the Kuils River, thus the improvements to the water quality would drastically reduce the health impacts associated with polluted water."
9	Sleep and rest		Never [1]	
10	Fuel for cooking and heating	BA	In detail [4]	"Close to half of the PARK is degraded and heavily invaded by alien plants. This is due to human impacts such as wood cutting, removal of plants for medicinal use" "Polywood has no re-sale value and cannot be used for firewood, thus reducing the likelihood of vandalism to the proposed infrastructure." "Conservation officers must police the area for any harvesting of natural species such as Haemanthus coccineus (for medicinal purposes) and Euclea racemosa (for firewood)"
11	Access to family planning		Never [1]	
12	Exercise		Never [1]	
13	Capacity to think, reason and make choices	BA	Superficially [2]	"The assessment was undertaken objectively, and in a rational and defendable way and the reasons for the judgments made has been well documented"
14	Sexual satisfaction		Never [1]	
15	Basic clothing		Never [1]	
16	Fashionable clothing		Never [1]	
17	Freedom for self-determination		Never [1]	
18	Income and wealth	BA	Superficially [2]	"The majority of households (69%) have a monthly income of R3 200 or less." "Expected yearly income or contribution to the local economy of R630,000 per annum".

19	Consumer durable and luxury goods		Never [1]	
20	Self-respect		Never [1]	
21	Land and cattle	BA	In detail [4]	"PARK is currently being illegally used for cattle grazing". "There is a small illegal "farm" comprising of informal buildings, kraals and shelters in the north eastern section of the site. The CoCT is in the process of legally relocating the farmers from the site."
22	Living in a clean and natural environment	BA, EMP	In detail [4]	"The PARK site is currently badly degraded due to human influence, which has reduced or transformed the natural vegetation. Cattle and goats use the area for grazing and the wetland areas are used as public toilets and dump sites. This has lead to high levels of litter and water pollution". "… operation of the PARK, the park would include continued removal and deterrence of litter and illegally dumped waste on the site". "Close to half of the PARK is degraded and heavily invaded by alien plants. This is due to human impacts such as wood cutting, removal of plants for medicinal use, illegal hunting and trampling caused by grazing cattle". "The development would provide the residents of Khayelitsha and visitors to the area with access to passive and active recreational areas. It would also provide environmental awareness, job creation as well as a sustainable urban environment." "Most of the wetlands in the PARK were assessed as Class A/B, in terms of their condition, which is indicative of relatively natural wetlands in fairly good condition". "In terms of the Khayelitsha/Mitchells Plain Greater Blue Downs District Plan: Spatial Development Plan and Environmental Management Framework (2012), the improvement of the water quality of river systems and the associated wetlands, in particular, the Kuils river and Wetlands is identified as a Management priority within this document. An aim of the Wetlands Park project is to ensure the improvement of the condition of the". "Wetlands area through the removal of alien vegetation and the regrowth of natural vegetation."
23	Coca-Cola (or other fizzy drink)		Never [1]	
24	Transportation	BA	Occasionally [3]	"The site is also used as an informal thoroughfare which has led to increased trampling and dissection of the wetland habitats. The No-Go alternative would result in the continued use of the existing informal pathways and their associated impacts, as well as the potential for additional informal pathways to be created."
25	(All weather) roads	BA	Occasionally [3]	"The primary pathway would be resurfaced with asphalt and concrete edgings (2.5m wide and 1900m long) while a number of secondary pathways would be constructed with concrete laterite edging and an permeable surface such as bark or wood chip, etc. (1m wide and 5 645m long) within the wetland area"
26	Watching sport		Never [1]	
27	Playing sport	BA	Occasionally [3]	"The City of Cape Town: Khayelitsha/Mitchells Plain Spatial Development Plan (2012) identifies the management of a sustainable form of urban growth […] that includes high-order destinations are those that every resident and visitor should visit at least once, whereas local-level destinations include public spaces such as squares, parks and sports facilities."
28	Electricity	C&R	Superficially [2]	"project proposes the inclusion of solar water geysers as a means of conserving electricity, as well as other innovations, such as the use of energy saver light bulbs"
29	Free time/recreation	BA	In detail [4]	"There is a profound lack of open space and natural areas which are safe for the community to make use of. Parks provide a space where people can satisfy their need for rejuvenation and break from the demands of a challenging urban lifestyle". "The development would provide the residents of Khayelitsha and visitors to the area with access to passive and active recreational areas. It […] as well as a sustainable urban environment". "The local community would be provided with access to a formalised park and the general quality of the area would be improved (i.e. improved water quality, reduction of litter in the wetland, formalised pathways, etc.)."
30	Having children	BA	Superficially [2]	"This measure should also reduce the human health risks associated with the ongoing exposure of the local community, especially children, to river water through full-contact recreation."
31	Watching TV/going to the cinema		Never [1]	
32	Drinking alcohol		Never [1]	
33	Living long		Never [1]	
34	Smoking cigarettes		Never [1]	
35	Property rights (the right to own personal property)	BA	Superficially [2]	"The activity permitted in terms of the property's existing land use rights." "no informal housing or over-nighting occurs within the PARK. When observed it must be addressed without delay. The OM shall contact the CoCT's Anti Land Invasion Unit."
36	Equal opportunities for personal advancement		Never [1]	
37	Determination, motivation, self-reliance		Never [1]	
38	Participate in political activities that affect your life	BA	Superficially [2]	"all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments"

7.1.4 Case Study 2: GAS EIA Scoping Study Report Analysis

7.1.4.1 Case Study 2 Report Analysis Part B: Consideration of 'barriers' to participation in the GAS EIA reports

Case Study 2: GAS SR Report Evaluation

Unclear [0]	Never [1]	Superficially [2]	Occasionally [3]	In detail [4]	Substantially [5]	**'Barrier' mentioned in report in relation to development**	**'Barrier' identified by the EAP to be not relevant to public participation**	**'Barrier' identified and considered relevant to public participation**	**'Barrier' discussed in report**	**'Barrier' appropriately addressed (mitigation, support provisions etc.)**	Integrated with EIA	Integrated with EMP
Barrier to participation												
Public knowledge of planning legal and licensing issues.						SR [1] C&R [1]	SR [] C&R []	SR [1] C&R [1]	SR [1] C&R [1]	SR [1] C&R [1]	SR [1]	N/A
No report mentions the challenge associated with difficulties around public knowledge of planning legal and licensing issues. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Some stakeholders base their objecting arguments on a sound understanding of the their constitutional rights and the relevant regulations governing off-shore developments.												
Provision of information.						SR [1] C&R [4]	SR [] C&R []	SR [1] C&R [4]	SR [1] C&R [0]	SR [1] C&R [1]	SR [1]	N/A
The C&R report mentions the challenge associated with provision of knowledge in the process and identifies it as a relevant issue. The superficial reference to it however makes it unclear how this would be overcome in the process. The barrier is not mentioned nor integrated in any other report. Some stakeholders base some of their objection arguments on inadequate provision of information and base some of their reasons for inclusion of their input into the project design based on the need for a more collaborative and comprehensive perspective.												
Poor access to legal advice.						SR [1] C&R [1]	SR [] C&R []	SR [1] C&R [1]	SR [1] C&R [1]	SR [1] C&R [1]	SR [1]	N/A
No report mentions the challenge associated with difficulties around stakeholder access to legal advice. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Some stakeholders base their objecting arguments on a sound understanding of the their constitutional rights and the relevant regulations governing off-shore developments.												
Mistrust of the industry.						SR [1] C&R [4]	SR [] C&R []	SR [1] C&R [4]	SR [1] C&R [1]	SR [1] C&R [1]	SR [1]	N/A
The C&R report mentions the challenge associated with mistrust of [the developer] as a parastatal and the independence of CSIR as the environmental consultants. However, the reports do not identify it as a relevant issue to the public participation process nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any other report. Some stakeholders are recorded in the reports indicating their lack of trust in the independence of the EAP and the developer they would prefer to not continue with discussions regarding alternative designs and rather would take the decision to court if it got authorised.												
NIMBY syndrome.						SR [1] C&R [1]	SR [] C&R []	SR [1] C&R [1]	SR [1] C&R [1]	SR [1] C&R [1]	SR [1]	N/A
No report mentions the challenge associated with difficulties around NIMBY syndrome. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Although the term 'NIMBY' is not mentioned, some stakeholders base their objection arguments in NIMBY-type expressions of preference and values. However no stakeholders are recorded in the reports indicating NIMBY aspects negatively affecting their participation experience.												
Failure to influence the decision making process.						SR [1] C&R [1]	SR [] C&R []	SR [1] C&R [1]	SR [1] C&R [1]	SR [1] C&R [1]	SR [1]	N/A
No report mentions the challenge associated with stakeholder influence on the decision making process. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Some stakeholders frame their objections to the development out of concern that despite engaging with the public participation process they do not feel confident that their concerns would be incorporated into the decision making.												
Poor execution of participation methods.						SR [1] C&R [1]	SR [] C&R []	SR [1] C&R [1]	SR [1] C&R [1]	SR [1] C&R [1]	SR [1]	N/A
No report mentions the challenge associated with stakeholder influence on the decision making process. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. No stakeholders are recorded in the reports asking for changes to, or additional, participatory methods affecting their participation experience.												
Regulatory constraints						SR [3] C&R [4]	SR [] C&R []	SR [1] C&R [1]	SR [1] C&R [1]	SR [1] C&R [1]	SR [1]	N/A
The SR and C&R reports discuss and identify mention the challenge associated with regulatory constraints. However, the reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Some stakeholders base their objecting arguments on a sound understanding of the their constitutional rights and the relevant regulations governing off-shore developments.												
Authorization efficiency.						SR [2] C&R [3]	SR [] C&R []	SR [1] C&R [3]	SR [1] C&R [3]	SR [1] C&R [3]	SR [1]	N/A
The SR and C&R reports superficially mention the challenge associated with job creation imperatives and economic growth but acknowledges the numerous concerns the project poses to the local tourism businesses and property values. The C&R report mentions it occasionally and the SR but does not discusses it as a barrier to participation. The reports identify it as a relevant issue. It is unclear in the SR how the barrier will be mitigated, and the SR presents a superficial integration of discussion when addressing the barrier with no examples of how the process met the equity or effectiveness challenge of this barrier. Many stakeholders expressed concern over the impacts of the development on livelihoods, the local economy and property prices, however none articulated these aspects as having a negative impact on their participation experience.												
Expert/elitist approach to EA.						SR [1] C&R [4]	SR [] C&R []	SR [1] C&R [4]	SR [1] C&R [1]	SR [1] C&R [1]	SR [1]	N/A
The C&R report mentions the challenge associated with difficulties regarding the technical and expert driven exercise of specialist studies that were treated with scepticism by many stakeholders. However, the reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Some stakeholders are recorded in the reports as having suspicion regarding the scientific studies, however these complaints are not linked to affecting their participation experience.												
Length of comment periods.						SR [1] C&R [1]	SR [] C&R []	SR [1] C&R [1]	SR [1] C&R [1]	SR [1] C&R [1]	SR [1]	N/A
No report mentions the challenge associated with difficulties with the length of comment periods. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. No stakeholders are recorded in the reports with complaints regarding the length of the comment periods affecting their participation experience.												

Emerging participatory democracy.	SR [1]	C&R [1]		SR []	C&R []		SR [1]	C&R [1]		SR [1]	C&R [1]		SR [1]	C&R [1]		SR [1]	N/A
No report mentions the challenge associated with difficulties associated with an emerging participatory democracy. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. No stakeholders are recorded in the reports with complaints regarding the emerging participatory democracy affecting their participation experience.																
Locus standi.	SR [1]	C&R [1]		SR []	C&R []		SR [1]	C&R [1]		SR [1]	C&R [1]		SR [1]	C&R [1]		SR [1]	N/A
No report mentions the challenge associated with difficulties around *locus standi*. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. No stakeholders are recorded in the reports with complaints regarding *Locus standi* affecting their participation experience.																
No guarantee of formal participation.	SR [1]	C&R [3]		SR []	C&R []		SR [1]	C&R [3]		SR [1]	C&R [1]		SR [1]	C&R [1]		SR [1]	N/A
The C&R report mentions the challenge associated with difficulties regarding formal participation guarantees. However, the reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Some stakeholders frame their objections to the development out of concern that despite engaging with the public participation process they do not feel confident that their concerns would be incorporated into the decision making.																
'Invisible' stakeholders.	SR [1]	C&R [1]		SR []	C&R []		SR [1]	C&R [1]		SR [1]	C&R [1]		SR [1]	C&R [1]		SR [1]	N/A
No report mentions the challenge associated with difficulties around 'invisible' stakeholders. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Despite the socio-economic profile of the local community no stakeholders are recorded in the reports with complaints regarding 'invisible' stakeholders affecting their participation experience.																
Inadequate scientific knowledge	SR [3]	C&R [4]		SR []	C&R []		SR [1]	C&R [1]		SR [1]	C&R [1]		N/A	N/A		SR [1]	N/A
The SR and C&R reports discuss and identify the challenge associated with inadequate scientific knowledge. However, the reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Stakeholders base some of their objection arguments on inadequate scientific knowledge in the Scoping Report.																
Lack of public capacity support, education & empowerment for participation.	SR [2]	C&R [2]		SR []	C&R []		SR [1]	C&R [1]		SR [1]	C&R [1]		SR [1]	C&R [1]		SR [1]	N/A
The SR and C&R reports mention the challenge associated with capacity support, education & empowerment for participation. However, the reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. No stakeholders are recorded in the reports to asking for, or citing, regulatory expectations for capacity support, education & empowerment for participation.																
Inappropriate language used.	SR [1]	C&R [1]		SR []	C&R []		SR [1]	C&R [1]		SR [1]	C&R [1]		SR [1]	C&R [1]		SR [1]	N/A
No report mentions the challenge associated with difficulties around the appropriate language used. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. No stakeholders are recorded in the reports with complaints regarding inappropriate language affecting their participation experience.																
Other Aspects:																
HIV/AIDS.	SR [1]	C&R [1]		SR []	C&R []		SR [1]	C&R [1]		SR [1]	C&R [1]		SR [1]	C&R [1]		SR [1]	N/A
No report mentions the challenge associated with difficulties associated with HIV/AIDS. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. No stakeholders are recorded in the reports with complaints regarding HIV/AIDS affecting their participation experience.																
Inadequate internet and email connectivity.	SR [1]	C&R [1]		SR []	C&R []		SR [1]	C&R [1]		SR [1]	C&R [1]		SR [1]	C&R [1]		SR [1]	N/A
No report mentions the challenge associated with difficulties associated with internet and email connectivity. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. No stakeholders are recorded in the reports with complaints regarding internet and email connectivity affecting their participation experience.																
Inadequate personal time for participation.	SR [1]	C&R [3]		SR []	C&R []		SR [1]	C&R [1]		SR [1]	C&R [1]		SR [1]	C&R [1]		SR [1]	N/A
Time for participation is mentioned superficially as a challenge to the process in the C&R. However, no report identifies nor discusses the challenges associated with time for participation and the reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Some stakeholders are recorded in the reports with complaints regarding time for reading and commenting on reports affecting their participation experience.																
Poverty and Unemployment	SR [3]	C&R [3]		SR []	C&R []		SR [3]	C&R [3]		SR [1]	C&R [1]		SR [1]	C&R [1]		SR [1]	N/A
The SR and C&R reports superficially mention the challenge associated with job creation imperatives and economic growth. The C&R report mentions it occasionally and the EIA discusses the barrier. The reports identify it as a relevant issue. It is unclear in the SR how the barrier will be mitigated, and the SR presents a superficial integration of discussion when addressing the barrier with no examples of how the process met the equity or effectiveness challenge of this barrier. Many stakeholders expressed concern over the impacts of the development on livelihoods, the local economy and property prices, however none articulated these aspects as having a negative impact on their participation experience.																

7.1.4.2 Case Study 2 Report Analysis Part C: Articulations of 'functional capabilities' in the GAS EIA reports

'Functional Capabilities' (Clark, 2003: 186)		Report	Emphasis Unsure [0], Never [1], Superficially [2] Occasionally [3], In detail [4] Substantially [5]	Quote from Report (example)
1	Jobs	SR,	Occasionally	"Rather spend this money on renewable energy sources. This makes sense from an economic perspective to [the developer] too, and will improve their long-term financial

		C&R	[3]	sustainability and ability to survive and provide jobs in a changing world". "In my opinion, the public are deliberately being deceived by "promises" of jobs and economic input."
2	Access to clean water and sanitation		Never [1]	
3	Housing and shelter		Never [1]	
4	Family and friends	SR, C&R	In detail [4]	"We are living in Vleesbaai and my family & friends and their ancestors has been swimming, playing and fishing in Vleesbaai for longer than I can imagine." "My family have had the privilege of living at Vleesbay for the past 52 years and it is with great anguish that we may have to experience and witness the destruction of yet another miracle creation on earth, in exchange for revenue for a selected few within South Africa." "Our family has been visiting Vleesbaai for the past fifty years. The pristine nature has always been the attraction for Vleesbaaiers. People want to get away from the everyday rush and noise and pollution!" "I would thus, with my family (representing 14 people), voice my grave concerns about this endeavour. We would like to appeal to your reason and our shared concern for the natural resources of this region that this project does not go through. We, as a family, will stand together to protect this for our future generations, in the spirit that my father and grandfather, did this for us."
5	Personal safety and physical security	SR, C&R	In detail [4]	"I also have a problem with a factory of that size in my immediate view area and a concern for my safety should things go wrong." "The whole of Vleesbaai is a pristine, safe and natural bay with no harbour, shipping lanes and activity except a few small craft that do recreational fishing. The building of such a facility will definitely alter the whole scenario in the bay and also lessen the property values substantially due to the fact that the bay is not industrialised at present and a rustic holiday or retirement and residential area. Nobody will feel safe with thousands of tonnes of highly flammable gas on their doorstep!!" "REVAG has since 2010 repeatedly pointed out that South Africa has no legal framework to regulate the imports of LNG by sea, the location of the LNG offloading facility, or the offloading and regasification of LNG. In the USA, for example, there are three regulatory agencies involved in LNG facilities. Each has certain roles and responsibilities during the safety, security and environmental reviews of LNG terminal applications: Federal Energy Regulatory Commission, Pipeline and Hazardous Materials Safety Administration & the United States Coast Guard."
6	An education		Never [1]	
7	Happiness	C&R	Superficially [2]	"Concerned resident. Not happy with new development in Vleesbaai area due to fact of environmental impact on an already fragile ecosystem."
8	Good health	C&R	Superficially [2]	"[…] would have an enormous impact not only life under water under threat, the health, risk and danger for everybody living along this coastline is very big." "This project is in direct conflict to Constitutional Rights to a clean and healthy environment. Proven danger to immediate surroundings (35 kilometre kill zone)."
9	Sleep and rest		Never [1]	
10	Fuel for cooking and heating	SR, C&R	Superficially [2]	"There is going to be a time when we cannot continue to rely on it for heating/transportation etc." "South Africa's current refining capacity is insufficient and as a result the country has been a net importer of gasoline (petrol) and diesel for over two years. The demand for refined fuels is expected to continue increasing."
11	Access to family planning		Never [1]	
12	Exercise		Never [1]	
13	Capacity to think, reason and make choices	SR, C&R	In detail [4]	"I am strongly opposed against the proposed development in Vleesbaai. My reasons are the following […]". "It surely cannot be jobs, alternative energy can create just as many if not more. The Vleesbaai Mosselbaai area stands to lose many jobs in the tourist industry, which is one of the mainstays if not the main contributor to the local economy which largely employs the local communities (something that GTL cannot boast)". "We demand a critical appraisal of this claim. Certainly neither the building, of the various vessels, nor of the breakwater and berthing facilities, nor of the pipelines will create many jobs for semi-skilled or unskilled local workers. The vessels will be built abroad. Highly skilled technicians will be required to set up the facilities. An Australian firm has already been contracted and they will most certainly use their own personnel and work force for most of what they will be required to do. It is hardly conceivable that local people will see much change in the availability of jobs during the construction phase. Neither will there be any noticeable change once the operational phase comes on". "There is reason to fear that people are being misled when they are told there will be any new employment opportunities." "At the said meeting, […], Chairman of REVAG, asked whether South Africa had any such regulations. [the developer]'s representatives, Mr […] ([the developer] Operations Manager – Offshore facilities) and Mr […] replied as follows: "there may not be such regulations at present"; "[the developer] had to develop their own standards and regulations for the FA platform, and they would have to do the same in this case". The Chairman of REVAG replied that it was totally unacceptable. [the developer] cannot be drafting its own regulations. All interested and affected parties had the right to know in advance what the standards and regulations are. And they must be benchmarked against international first world standards by an independent authority. There must be independent regulators." "The reasons for the DEA's rejection of the scoping report in 2010 should be disclosed to determine whether the DEA's reasons for rejection can be met and whether [the developer] is not wasting everybody's time." "The DEA Guideline document states that all alternatives that could be reasonable and feasible should be formulated as alternatives for further consideration in scoping and EIA. We submit that his may constitute a fatal flaw in the EIA process for the proposed project." "Any resident of Vleesbaai will be able to tell you that the idea of "the relatively protected waters of Vleesbaai" (as mentioned the BID) is a myth. During storms, the waters of Vleesbaai can be exceptionally rough. Due to the location of Vleesbaai and the angle it faces, it receives a large number of easterly swells. Days of consecutive easterly winds, or a storm push easterly swells into the bay. This happens a number of times during the year." "Fifth Major Objection from REVAG to the BID – Loss of Prime Surfing Area and Risk of Damage to Oyster Beds" "Proposed site for pipeline not acceptable." Response "CSIR: Please provide reasons why it is not acceptable." "Since there is ALREADY an industrial area in the Mossel Bay area, I see no reason why one of the few pristine nature areas should be used for any industrial activity - if only a few kilometres away an existing industrial area is already available."
14	Sexual satisfaction		Never [1]	
15	Basic clothing		Never [1]	
16	Fashionable clothing		Never [1]	
17	Freedom for self-determination		Never [1]	
18	Income and wealth	C&R	Occasionally [3]	"… impacting on the income of the yacht Club … Cruise ships will no longer come to the bay which will impact on the club." "deprivation of means of livelihood of people who depend on the sea and its bounties to make ends meet, need also to be taken into account" "many local people who depend on fishing and harvesting shellfish and particularly oysters will be deprived of an important source of food and livelihood if these assets were to be destroyed." "Being a single parent, this investment is important to me as it is something special I can leave my children."

19	Consumer durable and luxury goods		Never [1]	
20	Self-respect		Never [1]	
21	Land and cattle		Never [1]	
22	Living in a clean and natural environment	SR, C&R	In detail [4]	"We who built our houses along this beautiful coastline did so for its tranquility and beauty" "I am a house owner in Hoekbaai […] and a keen lover of the pristine nature around the Fransmanshoek Conservation area. It is actually for this exact reason that I have spent millions of rand in developing a dwelling to escape from the hustle and bustle of the city where I live. My intention is to move to Vleesbaai after retirement." "Concerned about the aesthetic and natural environmental impact on a very popular and naturally beautiful tourist destination in RSA." "Direct conflict to Constitutional Rights to a clean and healthy environment. Proven danger to immediate surroundings (35 kilometre kill zone). Dana Bay is a conservancy not an industrial zone. The bay has high marine activity and should be a protected marine reserve and not a parking bay for gas tankers."
23	Coca-Cola (or other fizzy drink)		Never [1]	
24	Transportation		Never [1]	
25	(All weather) roads	SR	Superficially [2]	"The gas pipeline will need to be installed under the N2 national road, and the necessary approval process will be followed with SANRAL."
26	Watching sport	C&R	Superficially [2]	"Sailing and enjoying water sports is a huge part of their life and of most of Mossel Bay's inhabitants. We see huge schools of dolphins in the bay."
27	Playing sport	C&R	Occasionally [3]	"The Mossel Bay Yacht and Boat Club use the bay extensively for sailing, angling and diving. We host provincial, national and international events in the bay that will be impacted by this LNG facility." "I am a member of the Mossel Bay Yacht and Boat Club. Sailing and enjoying water sports is a huge part of their life and of most of Mossel Bay's inhabitants […] Mossel Bay depends on tourism for its livelihood. All of this will be damaged or disappear with so much industrial activity. I have seen hundreds of dolphins at a time in one school. Can you guarantee that the environment and wildlife will not be damaged?"
28	Electricity	SR, C&R	Occasionally [3]	"human health and welfare, tourism and ecotourism are harmed just so that the petroleum industry and electricity industry can benefit." "[the developer]: The Integrated Resource Plan (IRP 2010) positions gas as a key source of new electricity, with at least 2.4 GW (or 6% of new capacity) expected to come from gasfired combined cycle generators." "the Eskom Gourikwa power plant, located to the west of the Mossel Bay GTL refinery, was constructed in 2007-2008 and has a maximum generation capacity of 740 MW. It currently uses liquid fuel (diesel) supplied by the GTL refinery to generate electricity and is intended to be used during peak periods and emergency situations to supply electricity into the national grid. In this manner, the power plant contributes to stabilising the national grid and thereby provides a national function. If LNG is available to the Gourikwa power plant, it could replace diesel,"
29	Free time/recreation	C&R	In detail [4]	"We use the area for recreational purposes. It would also present a significant environmental hazardous risk for people bathing/fishing/living in the area." "The whole of Vleesbaai is a pristine, safe and natural bay with no harbour, shipping lanes and activity except a few small craft that do recreational fishing. The building of such a facility will definitely alter the whole scenario in the bay" "negative impacts on environment and quality of life of people more directly affected, on property values and heritage treasures, on tourism, recreational facilities and commercial activities …" "We swim very often, playing in the sand with the grandchildren; snorkelling like near the rocks and row regularly to Fransmanshoek. I foresee that LNG facility would affect all of the above activities negatively"
30	Having children	C&R	Superficially [2]	"This does not give [the developer] the right to destroy the heritage of our children and grandchildren."
31	Watching TV/going to the cinema		Never [1]	
32	Drinking alcohol		Never [1]	
33	Living long	C&R	Occasionally [3]	"I own a site, [XX] in Vleesbaai and plan to retire there. I have no faith or trust in [the developer] whatsoever." "It will affect us and our precious holiday resorts and retirement homes. Why should we allow it? As investors and residents we cannot support and allow this project." "the bay is not industrialised at present and a rustic holiday or retirement and residential area. Nobody will feel safe with thousands of tonnes of highly flammable gas on their doorstep"
34	Smoking cigarettes		Never [1]	
35	Property rights (the right to own personal property)	C&R	In detail [4]	"Is this fair to the owners who invested to retire in this undeveloped area?" "Concern over the negative impacts on tourism and property values". "Direct conflict to Constitutional Rights to a clean and healthy environment. Proven danger to immediate surroundings (35 kilometre kill zone)." "We are not against the project, however, we are concerned about the location and proximity to the coast and towns. Our rights must not be transgressed." "If [the developer] proceeds with an EIA in this legislative vacuum, the constitutional rights of REVAG's members, and all current and future residents of the bay, may be violated"
36	Equal opportunities for personal advancement		Never [1]	
37	Determination, motivation, self-reliance	C&R	In detail [4]	"…I am also a member and supporter of … the Rescue Vleesbaai Action Group (REVAG) which represents stakeholders and property owners in the entire bay of Vleesbaai, from Pinnacle Point right around to Fransmanshoek." "As a member of REVAG I fully support and identify with the written submission made by REVAG under the signature of its chairman Mr […]." "Vleesbaai […] represents the stakeholders of Vleesbaai village in matters of common interest…" "I represent six families. We are extremely concerned about…" "I would thus, with my family (representing 14 people), voice my grave concerns…"
38	Participate in political activities that affect your life	C&R	Occasionally [3]	"For this reason we wish to express our concern regarding the very first step that was implemented in conducting the public participation process, namely a Focus Group meeting that was arranged in Danabaai on 22nd April 2013. The invitation to this meeting clearly stated that all the role players would be present in order to introduce the project teams who would be working on the project, namely the [the developer] LNG Import Project team, the CSIR team, the Engineering team and the process specialist (Email from […] dated 5 April 2013). For those who did take the trouble to attend it was most disappointing that the only representatives present were from the CSIR together with the process specialist." "Stakeholders who participated in the LNG1 EIA study were never informed about the decision by DEA". "we require that public participation meetings should be conducted in Johannesburg and/or Pretoria."

7.1.5 Case Study 3: WIND S&EIA Report Analysis

7.1.5.1 Case Study 3 Report Analysis Part B: Consideration of 'barriers' to participation in the WIND EIA reports

Case Study 3: WIND S&EIA Report Evaluation

Unclear [0]	Never [1]	Superficially [2]	Occasionally [3]	In detail [4]	Substantially [5]	'Barrier' mentioned in report in relation to development	'Barrier' identified by the EAP to be not relevant to public participation	'Barrier' identified and considered relevant to public participation	'Barrier' discussed in report	'Barrier' appropriately addressed (mitigation, support provisions etc.)	Integrated with EIA	Integrated with EMP
Barrier to participation												
Poor public knowledge of planning legal and licensing issues.						EIA [1] ESR [1] HSR [1] SR [2] VSR [1] C&R [2] ASR [1] NSR [1] EMP [1]	EIA ESR HSR SR VSR C&R ASR NSR EMP	EIA [1] ESR [1] HSR [1] SR [3] VSR [1] C&R [1] ASR [1] NSR [1] EMP [1]	EIA [1] ESR [1] HSR [1] SR [2] VSR [1] C&R [1] ASR [1] NSR [1] EMP [1]	EIA [1] ESR [1] HSR [1] SR [0] VSR [1] C&R [1] ASR [1] NSR [1] EMP [1]	EIA [1]	EMP [1]
The SR and the C&R reports superficially mention the challenge associated with public knowledge of the legal and regulatory climate. It is unclear how this will be overcome in the SR and the barrier is not mentioned nor integrated in any other report. Some stakeholders base their objecting arguments on a sound understanding of the their constitutional rights and the relevant regulations governing wind energy developments.												
Poor provision of information.						EIA [1] ESR [1] HSR [1] SR [1] VSR [1] C&R [1] ASR [1] NSR [1] EMP [2]	EIA ESR HSR SR VSR C&R ASR NSR EMP	EIA [1] ESR [1] HSR [1] SR [1] VSR [1] C&R [1] ASR [1] NSR [1] EMP [2]	EIA [1] ESR [1] HSR [1] SR [1] VSR [1] C&R [1] ASR [1] NSR [1] EMP [0]	EIA [1] ESR [1] HSR [1] SR [1] VSR [1] C&R [1] ASR [1] NSR [1] EMP [1]	EIA [1]	EMP [0]
The EMP report superficially mentions the challenge associated with provision of knowledge in the process and identifies it as a relevant issue. It is unclear how this will be overcome in the EMP and the barrier is not mentioned nor integrated in any other report. Some stakeholders base some of their objection arguments on inadequate provision of information and base some of their reasons for inclusion of their input into the project design based on the need for a more collaborative and comprehensive perspective.												
Poor access to legal advice.						EIA [1] ESR [1] HSR [1] SR [1] VSR [1] C&R [2] ASR [1] NSR [1] EMP [1]	EIA ESR HSR SR VSR C&R ASR NSR EMP	EIA [1] ESR [1] HSR [1] SR [1] VSR [1] C&R [1] ASR [1] NSR [1] EMP [1]	EIA [1] ESR [1] HSR [1] SR [1] VSR [1] C&R [1] ASR [1] NSR [1] EMP [1]	EIA [1] ESR [1] HSR [1] SR [1] VSR [1] C&R [1] ASR [1] NSR [1] EMP [1]	EIA [1]	EMP [1]
The C&R report superficially mentions the challenge associated with access to legal advice. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Some stakeholders base their objecting arguments on a sound understanding of the their constitutional rights and the relevant regulations governing wind energy developments.												
Mistrust of the industry.						EIA [1] ESR [1] HSR [1] SR [1] VSR [1] C&R [4] ASR [1] NSR [1] EMP [1]	EIA ESR HSR SR VSR C&R ASR NSR EMP	EIA [1] ESR [1] HSR [1] SR [1] VSR [1] C&R [1] ASR [1] NSR [1] EMP [1]	EIA [1] ESR [1] HSR [1] SR [1] VSR [1] C&R [1] ASR [1] NSR [1] EMP [1]	EIA [1] ESR [1] HSR [1] SR [1] VSR [1] C&R [1] ASR [1] NSR [1] EMP [1]	EIA [1]	EMP [1]
No report mentions the challenge associated with mistrust of the wind energy industry. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Some stakeholders are recorded in the reports indicating their lack of trust in the independence of the EAP, the specialist reports, and the perceived the justification of an EIA based on the forthcoming SEA for wind and Solar.												
NIMBY syndrome.						EIA [1] ESR [1] HSR [1] SR [1] VSR [1] C&R [4] ASR [1] NSR [1] EMP [1]	EIA ESR HSR SR VSR C&R ASR NSR EMP	EIA [1] ESR [1] HSR [1] SR [1] VSR [1] C&R [1] ASR [1] NSR [1] EMP [1]	EIA [1] ESR [1] HSR [1] SR [1] VSR [1] C&R [1] ASR [1] NSR [1] EMP [1]	EIA [1] ESR [1] HSR [1] SR [1] VSR [1] C&R [1] ASR [1] NSR [1] EMP [1]	EIA [1]	EMP [1]
No report mentions the challenge associated with a NIMBY syndrome even though this was a major issue at play with this wind energy facility. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Some stakeholders consider themselves a NIBY type objectors to the development and some stakeholders base their objection arguments in NIMBY-type expressions of preference and values. However no stakeholders are recorded in the reports indicating NIMBY aspects negatively affecting their participation experience.												
Failure to influence the decision making process.						EIA [1] ESR [1] HSR [1] SR [1] VSR [1] C&R [1] ASR [1] NSR [1] EMP [1]	EIA ESR HSR SR VSR C&R ASR NSR EMP	EIA [1] ESR [1] HSR [1] SR [1] VSR [1] C&R [1] ASR [1] NSR [1] EMP [1]	EIA [1] ESR [1] HSR [1] SR [1] VSR [1] C&R [1] ASR [1] NSR [1] EMP [1]	EIA [1] ESR [1] HSR [1] SR [1] VSR [1] C&R [1] ASR [1] NSR [1] EMP [1]	EIA [1]	EMP [1]
No report mentions the challenge associated with difficulties around stakeholder influence on decision making. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Some stakeholders frame their objections to the development out of concern that despite engaging with the public participation process they do not feel confident that their concerns would be incorporated into the decision making.												

Poor execution of participation methods.	EIA [2]	SR [1]	ASR [1]	EIA	SR	ASR	EIA [2]	SR [1]	ASR [1]	EIA [1]	SR [1]	ASR [1]	EIA [1]	SR [1]	ASR [1]		
	ESR [1]	VSR [1]	NSR [1]	ESR	VSR	NSR	ESR [1]	VSR [1]	NSR [1]	ESR [1]	VSR [1]	NSR [1]	ESR [1]	VSR [1]	NSR [1]		
	HSR [1]	C&R [3]	EMP [1]	HSR	C&R	EMP	HSR [1]	C&R [3]	EMP [1]	HSR [1]	C&R[1]	EMP [1]	HSR [1]	C&R [1]	EMP [1]	EIA [1]	EMP [1]
The C&R report and EIA report superficially mention the challenge associated with execution of participation methods. The reports identify it as a relevant issue. However, overcoming the barrier is not discussed nor integrated in any report. No stakeholders are recorded in the reports asking for changes to, or additional, participatory methods.																	
Regulatory constraints	EIA [2]	SR [2]	ASR [1]	EIA	SR	ASR	EIA [2]	SR [2]	ASR [1]	EIA [1]	SR [2]	ASR [1]	EIA [1]	SR [0]	ASR [1]		
	ESR [1]	VSR [1]	NSR [1]	ESR	VSR	NSR	ESR [1]	VSR [1]	NSR [1]	ESR [1]	VSR [1]	NSR [1]	ESR [1]	VSR [1]	NSR [1]		
	HSR [1]	C&R [2]	EMP [4]	HSR	C&R	EMP	HSR [1]	C&R [2]	EMP [4]	HSR [1]	C&R [1]	EMP [4]	HSR [1]	C&R [1]	EMP [4]	EIA [1]	EMP [4]
The SR, the EIA C&R reports superficially mention the challenge associated with regulatory constraints and the EMP discusses it in detail. The reports identify it as a relevant issue. Although it is unclear in the SR how the barrier will be mitigated, the EMP gives clear and integrated guidance. Some stakeholders are recorded in the reports indicating their lack of trust in the independence of the EAP, the specialist reports, and the perceived the justification of an EIA based on the forthcoming SEA for wind and Solar.																	
Authorization efficiency.	EIA[4]	SR [2]	ASR [1]	EIA	SR	ASR	EIA[4]	SR [2]	ASR [1]	EIA[4]	SR [1]	ASR [1]	EIA [2]	SR [1]	ASR [1]		
	ESR [1]	VSR [1]	NSR [1]	ESR	VSR	NSR	ESR [1]	VSR [1]	NSR [1]	ESR [1]	VSR [1]	NSR [1]	ESR [1]	VSR [1]	NSR [1]		
	HSR [1]	C&R [3]	EMP [2]	HSR	C&R	EMP	HSR [1]	C&R [3]	EMP [2]	HSR [1]	C&R [2]	EMP [0]	HSR [1]	C&R [2]	EMP [0]	EIA [2]	EMP [0]
The SR and EMP reports superficially mention the challenge associated with job creation imperatives and economic growth. The C&R report mentions it occasionally and the EIA discusses the barrier. The reports identify it as a relevant issue. Although it is unclear in the EMP how the barrier will be mitigated, and the EIA presents a superficial integration of discussion when addressing the barrier with no examples of how the process met the equity or effectiveness challenge of this barrier. Many stakeholders expressed concern over the impacts of the development on livelihoods, the local economy and property prices, however none articulated these aspects as having a negative impact on their participation experience.																	
Expert/elitist approach to EA.	EIA [2]	SR [2]	ASR [2]	EIA	SR	ASR	EIA [2]	SR [2]	ASR [2]	EIA [2]	SR [0]	ASR [2]	EIA [2]	SR [0]	ASR [2]		
	ESR [2]	VSR [1]	NSR [1]	ESR	VSR	NSR	ESR [2]	VSR [1]	NSR [1]	ESR [2]	VSR [1]	NSR [1]	ESR [2]	VSR [1]	NSR [1]		
	HSR [2]	C&R [1]	EMP [2]	HSR	C&R	EMP	HSR [2]	C&R [2]	EMP [2]	HSR [2]	C&R [1]	EMP [2]	HSR [2]	C&R [1]	EMP [2]	EIA [2]	EMP [2]
Most of the reports [EIA, SR, ASR, ESR, HSR, C&R, EMP) superficially mention, identify and discuss the challenge associated with an expert/elitist approach to EA. Despite this consensus in acknowledgement of the challenge of this barrier, it is not discussed in detail and not adequately integrated into the reports with no examples of how the process met the equity or effectiveness challenge of this barrier. Some stakeholders are recorded in the reports as having suspicion regarding the scientific studies, however these complaints are not linked to affecting their participation experience.																	
Length of comment periods.	EIA [2]	SR [2]	ASR [2]	EIA	SR	ASR	EIA [2]	SR [0]	ASR [0]	EIA [2]	SR [0]	ASR [0]	EIA [2]	SR [1]	ASR[1]		
	ESR [2]	VSR [2]	NSR [2]	ESR	VSR	NSR	ESR [0]	VSR [0]	NSR [0]	ESR [0]	VSR [0]	NSR [0]	ESR [1]	VSR [1]	NSR [1]		
	HSR [2]	C&R [2]	EMP [1]	HSR	C&R	EMP	HSR [0]	C&R [2]	EMP [1]	HSR [0]	C&R [1]	EMP [1]	HSR[1]	C&R [1]	EMP [1]	EIA [2]	EMP [1]
Most of the reports [EIA, SR, ASR, ESR, VSR, NSR, HSR, C&R) superficially mention, identify and discuss the challenge associated with an the short length of comment periods. Despite being mentioned by many reports it is unclear if this barrier is acknowledged in the reports as a relevant challenge to the process. The barrier is not discussed in detail and not adequately integrated into the reports with no examples of how the process met the equity or effectiveness challenge of this barrier. Some stakeholders are recorded in the reports with complaints regarding the length of the comment periods as too short in their participation experience.																	
Emerging participatory democracy.	EIA [1]	SR [1]	ASR[1]	EIA	SR	ASR	EIA [1]	SR [1]	ASR [1]	EIA [1]	SR [1]	ASR [1]	EIA [1]	SR [1]	ASR [1]		
	ESR [1]	VSR [1]	NSR [1]	ESR	VSR	NSR	ESR [1]	VSR [1]	NSR [1]	ESR [1]	VSR [1]	NSR [1]	ESR [1]	VSR [1]	NSR[1]		
	HSR [1]	C&R [1]	EMP [1]	HSR	C&R	EMP	HSR [1]	C&R [1]	EMP [1]	HSR [1]	C&R [1]	EMP [1]	HSR [1]	C&R [1]	EMP [1]	EIA [1]	EMP [1]
No report mentions the challenge associated with difficulties around the challenge or an emerging participatory democracy. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. No stakeholders are recorded in the reports with complaints regarding the emerging participatory democracy affecting their participation experience.																	
Locus standi.	EIA [2]	SR [2]	ASR [1]	EIA	SR	ASR	EIA [2]	SR [0]	ASR [1]	EIA [2]	SR [0]	ASR [1]	EIA [2]	SR [0]	ASR [1]		
	ESR [1]	VSR [1]	NSR [1]	ESR	VSR	NSR	ESR [1]	VSR [1]	NSR [1]	ESR [1]	VSR [1]	NSR [1]	ESR [1]	VSR [1]	NSR [1]		
	HSR [1]	C&R [1]	EMP [1]	HSR	C&R	EMP	HSR [1]	C&R [1]	EMP [1]	HSR [1]	C&R [1]	EMP [1]	HSR [1]	C&R [1]	EMP [1]	EIA [2]	EMP [1]
The CR and the EIA superficially mention, identify and discuss *locus standi* as a challenge to representation of stakeholders in the process. However, the barrier is not discussed in detail and not adequately integrated into the reports with no examples of how the process met the equity or effectiveness challenge of this barrier. Some stakeholders are recorded in the reports with complaints regarding *Locus standi* affecting their participation experience.																	
No guarantee of formal participation.	EIA [1]	SR [1]	ASR [1]	EIA	SR	ASR	EIA [1]	SR [1]	ASR [1]	EIA [1]	SR [1]	ASR [1]	EIA [1]	SR [1]	ASR [1]		
	ESR [1]	VSR [1]	NSR [1]	ESR	VSR	NSR	ESR [1]	VSR [1]	NSR [1]	ESR [1]	VSR [1]	NSR [1]	ESR [1]	VSR [1]	NSR [1]		
	HSR [1]	C&R [1]	EMP [1]	HSR	C&R	EMP	HSR [1]	C&R [1]	EMP [1]	HSR [1]	C&R [1]	EMP [1]	HSR [1]	C&R [1]	EMP [1]	EIA [1]	EMP [1]
No report mentions the challenge associated with difficulties regarding guarantees and provisions for formal participation. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Some stakeholders frame their objections to the development out of concern that despite engaging with the public participation process they do not feel confident that their concerns would be incorporated into the decision making.																	
'Invisible' stakeholders.	EIA [1]	SR [1]	ASR [1]	EIA	SR	ASR	EIA [1]	SR [1]	ASR [1]	EIA [1]	SR [1]	ASR [1]	EIA [1]	SR [1]	ASR [1]		
	ESR [1]	VSR [1]	NSR [1]	ESR	VSR	NSR	ESR [1]	VSR [1]	NSR [1]	ESR [1]	VSR [1]	NSR [1]	ESR [1]	VSR [1]	NSR [1]		
	HSR [1]	C&R [1]	EMP [1]	HSR	C&R	EMP	HSR [1]	C&R [1]	EMP [1]	HSR [1]	C&R [1]	EMP [1]	HSR [1]	C&R [1]	EMP [1]	EIA [1]	EMP [1]
No report mentions the challenge associated with difficulties around 'invisible' stakeholders. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Despite the socio-economic profile of the local community no stakeholders are recorded in the reports with complaints regarding 'invisible' stakeholders affecting their participation experience.																	

Inadequate scientific knowledge (Data deficient etc.).	EIA [2]	SR [2]	ASR	EIA	SR	ASR [1]	EIA [2]	SR [2]	ASR	EIA [2]	SR [2]	ASR	EIA [0]	SR [0]	ASR		
	ESR	VSR	NSR	ESR [1]	VSR [1]	NSR [1]	ESR	VSR	NSR	ESR	VSR	NSR	ESR	VSR	NSR		
	HSR	C&R [2]	EMP [1]	HSR [1]	C&R	EMP	HSR	C&R [2]	EMP [1]	HSR	C&R [2]	EMP [1]	HSR	C&R [1]	EMP [1]	EIA [2]	EMP [1]
The specialist reports identify the challenge of inadequate scientific knowledge but do not consider it an obstacle that would adversely affect the information base for decision making. The EIA, SR, and C&R reports superficially mention, identify and discuss the challenge associated with an the short length of comment periods. Despite being mentioned by these reports it is unclear if this barrier is acknowledged in the reports as a relevant challenge to the process. The barrier is not discussed in detail and not adequately integrated into the reports with no examples of how the process met the equity or effectiveness challenge of this barrier. Stakeholders base some of their objection arguments on inadequate scientific knowledge in the Scoping Report, EIA and Specialist Reports.																
Lack of public capacity support, education & empowerment for participation.	EIA [1]	SR [1]	ASR [1]	EIA	SR	ASR	EIA [1]	SR [1]	ASR [1]	EIA [1]	SR [1]	ASR [1]	EIA [1]	SR [1]	ASR [1]		
	ESR [1]	VSR [1]	NSR [1]	ESR	VSR	NSR	ESR [1]	VSR [1]	NSR [1]	ESR [1]	VSR [1]	NSR [1]	ESR [1]	VSR [1]	NSR [1]		
	HSR [1]	C&R [1]	EMP [1]	HSR	C&R	EMP	HSR [1]	C&R [1]	EMP [1]	HSR [1]	C&R [1]	EMP [1]	HSR [1]	C&R [1]	EMP [1]	EIA [1]	EMP [1]
Despite explicit mention in the NEMA for the need for provisions by the process that, where relevant, would overcome any of the associated challenges of this barrier, no report mentions the challenge associated with difficulties around public capacity support, education and empowerment for participation. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. No stakeholders are recorded in the reports to ask for or site regulatory expectations for capacity support, education & empowerment for participation.																	
Inappropriate language used.	EIA [1]	SR [1]	ASR [1]	EIA	SR	ASR	EIA [1]	SR [1]	ASR [1]	EIA [1]	SR [1]	ASR [1]	EIA [1]	SR [1]	ASR [1]		
	ESR [1]	VSR [1]	NSR [1]	ESR	VSR	NSR	ESR [1]	VSR [1]	NSR [1]	ESR [1]	VSR [1]	NSR [1]	ESR [1]	VSR [1]	NSR [1]		
	HSR [1]	C&R [1]	EMP [2]	HSR	C&R	EMP	HSR [1]	C&R [1]	EMP [2]	HSR [1]	C&R [1]	EMP [0]	HSR [1]	C&R [1]	EMP [1]	EIA [1]	EMP [0]
The EMP is the only report that acknowledges the challenge of appropriate language but it is unclear how mitigation for this barrier would be implemented and it is not integrated with the discussion. No stakeholders are recorded in the reports with complaints regarding inappropriate language affecting their participation experience.																	
Other Aspects:																	
HIV/AIDS.	EIA [1]	SR [1]	ASR [1]	EIA	SR	ASR	EIA [1]	SR [1]	ASR [1]	EIA [1]	SR [1]	ASR [1]	EIA [1]	SR [1]	ASR [1]		
	ESR [1]	VSR [1]	NSR [1]	ESR	VSR	NSR	ESR [1]	VSR [1]	NSR [1]	ESR [1]	VSR [1]	NSR [1]	ESR [1]	VSR [1]	NSR [1]		
	HSR [1]	C&R [1]	EMP [2]	HSR	C&R	EMP	HSR [1]	C&R [1]	EMP [1]	HSR [1]	C&R [1]	EMP [1]	HSR [1]	C&R [1]	EMP [1]	EIA [1]	EMP [1]
Although the EMP mentions HIV/AIDS, no report identifies nor discusses the challenges associated with HIV/AIDS as a barrier to participation. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. No stakeholders are recorded in the reports with complaints regarding HIV/AIDS affecting their participation experience.																	
Inadequate internet and email connectivity.	EIA [1]	SR [1]	ASR [1]	EIA	SR	ASR	EIA [1]	SR [1]	ASR [1]	EIA [1]	SR [1]	ASR [1]	EIA [1]	SR [1]	ASR [1]		
	ESR [1]	VSR [1]	NSR [1]	ESR	VSR	NSR	ESR [1]	VSR [1]	NSR [1]	ESR [1]	VSR [1]	NSR [1]	ESR [1]	VSR [1]	NSR [1]		
	HSR [1]	C&R [2]	EMP [1]	HSR	C&R	EMP	HSR [1]	C&R [2]	EMP [1]	HSR [1]	C&R [2]	EMP [1]	HSR [1]	C&R [1]	EMP [1]	EIA [1]	EMP [1]
The C&R report is the only report that acknowledges the challenge of internet and email connectivity but it is not discussed how mitigation for this barrier would be implemented and it is not integrated with the discussion. No stakeholders are recorded in the reports with complaints regarding internet and email connectivity affecting their participation experience.																	
Inadequate personal time for participation.	EIA [1]	SR [2]	ASR [1]	EIA	SR	ASR	EIA [1]	SR [1]	ASR [1]	EIA [1]	SR [1]	ASR [1]	EIA [1]	SR [1]	ASR [1]		
	ESR [1]	VSR [1]	NSR [1]	ESR	VSR	NSR	ESR [1]	VSR[1]	NSR [1]	ESR [1]	VSR[1]	NSR [1]	ESR [1]	VSR[1]	NSR [1]		
	HSR [1]	C&R [1]	EMP [2]	HSR	C&R	EMP	HSR [1]	C&R [1]	EMP [1]	HSR [1]	C&R [1]	EMP [1]	HSR [1]	C&R [1]	EMP [1]	EIA [1]	EMP [1]
Time for participation is mentioned superficially as a challenge to the process in the SR and the EMP. However, no report identifies nor discusses the challenges associated with time for participation and the reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report.																	
Poverty and Unemployment	EIA [3]	SR [3]	ASR [1]	EIA	SR	ASR	EIA [3]	SR [3]	ASR [1]	EIA [0]	SR [0]	ASR [1]	EIA [0]	SR [0]	ASR [1]		
	ESR [1]	VSR [1]	NSR [1]	ESR	VSR	NSR	ESR [1]	VSR [1]	NSR [1]	ESR [1]	VSR [1]	NSR [1]	ESR [1]	VSR [1]	NSR [1]		
	HSR [1]	C&R [1]	EMP [1]	HSR	C&R	EMP	HSR [1]	C&R [1]	EMP [1]	HSR [1]	C&R [1]	EMP [1]	HSR [1]	C&R [1]	EMP [1]	EIA [0]	EMP [1]
The EIA and the SR occasionally identify the challenge of poverty and unemployment but long-term project employment information is superficial and it is unclear how mitigation for this barrier would be implemented. It is not integrated with the discussion. Many stakeholders expressed concern over the impacts of the development on livelihoods, the local economy and property prices, however none articulated these aspects as having a negative impact on their participation experience.																	

7.1.5.2 Case Study 3 Report Analysis Part C: Articulations of 'functional capabilities' in the WIND EIA reports

'Functional Capabilities' (Clark, 2003: 186)		Report	Emphasis Unsure [0], Never [1], Superficially [2] Occasionally [3], In detail [4] Substantially [5]	Quote from Report (example)
1	Jobs	SR, EIA,	In detail [4]	"a significant number of jobs have been lost in the Eastern Cape since 2007 … there are currently 1.3 million unemployed persons in the province". "project will help with the creation of employment and transfer of new technical skills to the residents of the area during both the project development and

		C&R	Sometimes superficial [2]	operations phases of the project." "We are estimating a minimum 100-125 people during construction, followed by 8-10 permanent staff (direct jobs) and up to 150 indirect jobs for South Africa for a 10-turbine project."
2	Access to clean water and sanitation	EIA, EMP	Superficially [2]	"Fresh water only mentioned in relation to affected animal species." "All effluent water from the camp/office sites shall be disposed of or stored in a properly designed and constructed system, situated so as not to adversely affect water sources (streams, rivers, pans dams, etc.)."
3	Housing and shelter	EIA, C&R	Superficially [2]	"The local prison and the associated staff housing complex are situated to the north west of the proposed project site." "The farms and houses close to the wind farm site will have the highest visual exposure."
4	Family and friends	None	Never [1]	
5	Personal safety and physical security	EIA, C&R, EMP	Occasionally [3]	"One such condition is that the project proponent furnish the relevant authority with a geotechnical assessment proving that the proposed facility will be structurally sound and will not pose a safety risk to surrounding structures or people." "…it was found that the Makana Local Municipality exhibits the highest crime rates within the district at 56.7%." "To date, there have been no fatalities linked to the breaking of a wind turbine, although approximately 100,000 wind turbines have been installed worldwide."
6	An education	EIA, VSR, EMP, C&R	In detail [4]	"the […] Education Trust, a trust in the process of being formed by [the developer] in consultation with [a partner] and which will hold a 26 percent equity stake in the wind farm company." "the Trust will have numerous social development, welfare up-liftment and advancement of learners and educational infrastructure, as its core objectives for boosting the economic and social performance of the area." "'Engaging school groups can also assist the wind farm proponent, as energy education is paramount in developing good public relations over the long term. Instilling the concept of sustainability, and creating awareness of the need for wind farm developments, is an important process that can engage the entire community' […]." "Surely the wind farm could have been placed in a less obtrusive location with the same benefit to the education of our children."
7	Happiness	C&R	Superficially [2]	People who go to game reserves are happy to be able to see the N2 and associated traffic as well as powerlines, the wind farm does not have such a high visual impact.
8	Good health	EIA, C&R	In detail [4]	"What about issues such as vertigo caused by non-audible noise (infrasound) and effects on sleep?" "There are no health effects from infrasound below 90dB."
9	Sleep and rest	EIA, C&R	In detail [4]	"What about issues such as vertigo caused by non-audible noise (infrasound) and effects on sleep?"
10	Fuel for cooking and heating	EIA	Superficially [2]	Electricity generated from wind power indirectly discussed in relation to domestic needs for clean energy.
11	Access to family planning	None	Never [1]	
12	Exercise	None	Never [1]	
13	Capacity to think, reason and make choices	EIA, ASR, C&R	Substantially [5]	"it would therefore be reasonable to assume that if vibrations and low-frequency noise did have a significant negative impact on animal communications, that this impact would already be in effect." "this Chapter provides the EAP's opinion as to whether the activity should or should not be authorised as well as the reason(s) for the opinion." "identification of alternatives must be reasonable and practical." "the proposed project will be beneficial for the following reasons[…]" "The significance scale is an attempt to evaluate the importance of a particular impact. This evaluation needs to be undertaken in the relevant context, as an impact can either be ecological or social, or both. The evaluation of the significance of an impact relies heavily on the values of the person making the judgment. For this reason, impacts of a social nature need to reflect the values of the affected society." "I think this project can be a catalyst for the Eastern Cape in alternative energy." "I think these tourism issues are being swept under the carpet. What if we want to start a game farm in the future? This has not been taken into account."
14	Sexual satisfaction	None	Never [1]	
15	Basic clothing	None	Never [1]	
16	Fashionable clothing	None	Never [1]	
17	Freedom for self-determination	None	Never [1]	
18	Income and wealth	EIA, C&R	Occasionally [3]	"the value of properties in the proximity of the wind farm would decrease in value and, secondly, that the visibility of the facility from local private game reserves and hunting establishments would deter clients, thus resulting in a loss of income and jobs." "The demographics of the Makana Municipality also show a predominantly black population, with low incomes, and high levels of unemployment. This data also reflected that 66% of the population receive no income and 15% earn income within the R400 – R800 bracket. This reflects the level of poverty within the municipality." "An examination of the distribution of income between the race groups within the province (Table 3-8) indicates that the Black majority (86%) earns far less than the White minority (7%) who earn 34% of all household income." "The largest group of the population is the economically active group (between the ages of 15-64) constituting approximately 67% of the Makana population. Employment and income levels are low within the municipality. However, according to the StatsSA (Census, 2001) data, 42% of the population of Makana is economically inactive and in the period between 1996 and 2001, unemployment levels increased by 48% within the municipality. This data also reflected that 66% of the population receive no income and 15% earn income within the R400 – R800 bracket. This reflects the

				level of poverty within the municipality." "is unlikely that any study at this stage would be able to provide an accurate assessment of the economic impact of the proposed development"
19	Consumer durable and luxury goods	None	Never [1]	
20	Self-respect	None	Never [1]	
21	Land and cattle	EIA, C&R	Occasionally [3]	"While the development of the proposed wind farm at WIND may result in a reduction in the value of surrounding properties, it may also be argued that local property prices may benefit through either the expectation of potential income from similar developments in the area or the perception held by some that wind farms are a symbol of a more sustainable future." "Some of the Quartzite fynbos is degraded due to cattle grazing and contains few of the important species that exist in this vegetation type". "It is very difficult to assess future property values and there are very opposite opinions on the matter, so it cannot be predicted with scientific accuracy. There have been occasions where property values near a wind farm have increased, and instances where they have decreased."
22	Living in a clean and natural environment	EIA	Occasionally [3]	"The project has potential environmental and socio-economic benefits including the generation of clean energy for Grahamstown." "Much of the natural habitat has been transformed by these agricultural practices." "Eco-tourism and hunting has replaced agriculture and it is now in the interest of these farmers to conserve and rehabilitate natural habitats." "It is generally understood that a development of this scale and visibility will be incongruent with a natural or scenic landscape."
23	Coca-Cola (or other fizzy drink)	None	Never [1]	
24	Transportation	EIA	Superficially [2]	"transport of large turbine components may occur after work hours to minimize disruption of traffic on main roads." "Transport sector provides 31,000 jobs in the province."
25	(All weather) roads	EIA	Superficially [2]	"…traffic on main roads."
26	Watching sport	None	Never [1]	
27	Playing sport	None	Never [1]	
28	Electricity	SR, EIA	Substantially [5]	"… while forming part of the national power grid, will help stabilize and supplement the local power grid, especially during cold fronts of the winter season when consumption is at its highest and wind yields are too. It will further ease the increased electricity consumption that the expansion of teaching and residence facilities at the University will require." "Some houses in Grahamstown are connected to the Municipal supply, and some to Eskom, (there is a divide between east and west)."
29	Free time/recreation	EIA	Occasionally [3]	"Visual receptors are identified by looking at the development viewshed, and include scenic viewpoints, residents, motorists and recreational users of facilities within the viewshed. A large number of highly sensitive visual receptors can be a predictor of a high intensity/magnitude visual impact."
30	Having children	None	Never [1]	
31	Watching TV/going to the cinema	None	Never [1]	
32	Drinking alcohol	None	Never [1]	
33	Living long	None	Never [1]	
34	Smoking cigarettes	None	Never [1]	
35	Property rights (the right to own personal property)		Occasionally [3]	"It is very difficult to assess future property values and there are very opposite opinions on the matter, so it cannot be predicted with scientific accuracy. There have been occasions where property values near a wind farm have increased, and instances where they have decreased."
36	Equal opportunities for personal advancement	None	Never [1]	
37	Determination, motivation, self-reliance	None	Occasionally [3]	"I think these tourism issues are being swept under the carpet. What if we want to start a game farm in the future? This has not been taken into account."
38	Participate in political activities that affect your life	SR, EIA	In detail [4]	"…allows for all role players – stakeholders and Interested and Affected Parties (I&APs) - to gain a greater understanding of the project by means of a public participation process." "Key stakeholders are identified and notified of the proposed development and the ways in which they can be involved." "Stakeholders and I&APs are encouraged to register by sending their names and contact details to the EAP, whereupon they are sent a copy of the BID, and are thereafter kept informed of and involved in all subsequent stages of the EIA process."

7.1.6 Case Study 4: MINE Report Analysis

7.1.6.1 Case Study 4 Report Analysis Part B: Consideration of 'barriers' to participation in the MINE EIA reports

Case Study 4: MINE Report Evaluation																		
Unclear [0]	Never [1]	Superficially [2]	Occasionally [3]	In detail [4]	Substantially [5]	**'Barrier' mentioned in report in relation to development**			**'Barrier' identified by the EAP to be not relevant to public participation**			**'Barrier' identified and considered relevant to public participation**			**'Barrier' discussed in report**			**'Barrier' appropriately addressed (mitigation, support provisions etc.)**			Integrated with EIA	Integrated with EMP
Barrier to participation																							
Poor public knowledge of planning legal and licensing issues.						EIA [1]	ANR [1]	ASR [1]	EIA []	ANR []	ASR []	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]		
						FWR [2]	VSR [1]	TSR [1]	FWR []	VSR []	TSR []	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]		
						SES [1]	C&R [4]	EMP [3]	SES []	C&R []	EMP []	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	EIA [1]	EMP [1]
The FWR, C&R and EMP mention the challenge associated with difficulties around public knowledge of planning legal and licensing issues. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Some stakeholders found it difficult to understand the parallel process of the EIA and the MINE and which minister was responsible. This confusion of procedural process was conflated with the substantive issues in the reports.																							
Poor provision of information.						EIA [2]	ANR [1]	ASR [1]	EIA []	ANR []	ASR []	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]		
						FWR [1]	VSR [1]	TSR [1]	FWR []	VSR []	TSR []	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]		
						SES [1]	C&R [3]	EMP [1]	SES []	C&R []	EMP []	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	EIA [1]	EMP [1]
The C&R report mentions the challenge associated with provision of knowledge in the process but the EIA does not identifies it as a relevant issue. The superficial reference to it however makes it unclear how this would be overcome in the process. The barrier is not mentioned nor integrated in any other report. Some stakeholders base some of their objection arguments on inadequate provision of information and base some of their reasons for inclusion of their input into the project design based on the need for a more collaborative and comprehensive perspective.																							
Poor access to legal advice.						EIA [1]	ANR [1]	ASR [1]	EIA []	ANR []	ASR []	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]		
						FWR [1]	VSR [1]	TSR [1]	FWR []	VSR []	TSR []	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]		
						SES [1]	C&R [1]	EMP [1]	SES []	C&R []	EMP []	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	EIA [1]	EMP [1]
No report mentions the challenge associated with difficulties around stakeholder access to legal advice. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Some stakeholders found it difficult to understand the parallel process of the EIA and the MINE and which minister was responsible. This confusion of procedural process was conflated with the substantive issues in the reports.																							
Mistrust of the industry.						EIA [1]	ANR [1]	ASR [1]	EIA []	ANR []	ASR []	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]		
						FWR [1]	VSR [1]	TSR [1]	FWR []	VSR []	TSR []	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]		
						SES [1]	C&R [4]	EMP [1]	SES []	C&R []	EMP []	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	EIA [1]	EMP [1]
The C&R report mentions the challenge associated with mistrust of the mining industry, the developer and the independence of BRAAF as the environmental consultants. However, the reports do not identify it as a relevant issue to the public participation process nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any other report. Some stakeholders are recorded in the reports indicating their lack of trust in the independence of the EAP and the developer they would prefer to not continue with discussions regarding alternative designs and chose to take the decision to court on appeal after authorization.																							
NIMBY syndrome.						EIA [1]	ANR [1]	ASR [1]	EIA []	ANR []	ASR []	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]		
						FWR [1]	VSR [1]	TSR [1]	FWR []	VSR []	TSR []	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]		
						SES [1]	C&R [3]	EMP [1]	SES []	C&R []	EMP []	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	EIA [1]	EMP [1]
The C&R report mentions the challenge associated with difficulties around NIMBY syndrome. However, the reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Although the term 'NIMBY' is not mentioned, some stakeholders base their objection arguments in NIMBY-type expressions of preference and values. However no stakeholders are recorded in the reports indicating NIMBY aspects negatively affecting their participation experience.																							
Failure to influence the decision making process.						EIA [1]	ANR [1]	ASR [1]	EIA []	ANR []	ASR []	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]		
						FWR [1]	VSR [1]	TSR [1]	FWR []	VSR []	TSR []	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]		
						SES [1]	C&R [4]	EMP [1]	SES []	C&R []	EMP []	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	EIA [1]	EMP [1]
The C&R report mentions the challenge associated with stakeholder influence on the decision making process. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Some stakeholders frame their objections to the development out of concern that despite engaging with the public participation process they do not feel confident that their concerns would be incorporated into the decision making.																							
Poor execution of participation methods.						EIA [1]	ANR [1]	ASR [1]	EIA []	ANR []	ASR []	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]	EIA [1]	EMP [1]

	FWR [1]	VSR [1]	TSR [1]	FWR []	VSR []	TSR []	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]			
	SES [1]	C&R [4]	EMP [1]	SES []	C&R []	EMP []	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]			
The C&R report mentions the challenge associated with stakeholder influence on the decision making process. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. No stakeholders are recorded in the reports asking for changes to, or additional, participatory methods affecting their participation experience.																		
Regulatory constraints	EIA [3]	ANR [1]	ASR [1]	EIA []	ANR []	ASR []	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]			
	FWR [1]	VSR [1]	TSR [1]	FWR []	VSR []	TSR []	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]			
	SES [1]	C&R [4]	EMP [3]	SES []	C&R []	EMP []	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	EIA [1]	EMP [1]	
The EIA, C&R and EMP reports discuss and identify/mention the challenge associated with regulatory constraints. However, the reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Some stakeholders found it difficult to understand the parallel process of the EIA and the MINE and which minister was responsible. This confusion of procedural process was conflated with the substantive issues in the reports.																		
Authorization efficiency.	EIA [3]	ANR [1]	ASR [1]	EIA []	ANR []	ASR []	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]			
	FWR [1]	VSR [1]	TSR [1]	FWR []	VSR []	TSR []	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]			
	SES [4]	C&R [4]	EMP [3]	SES []	C&R []	EMP []	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	EIA [1]	EMP [1]	
The EIA, ESE, C&R and EMP reports superficially mention the challenge associated with job creation imperatives and economic growth but acknowledges the numerous concerns the project poses to the local tourism businesses and property values. The C&R report mentions it occasionally and the SR but do not discusses it as a barrier to participation. The reports identify it as a relevant issue. It is unclear in the SR how the barrier will be mitigated, and the SR presents a superficial integration of discussion when addressing the barrier with no examples of how the process met the equity or effectiveness challenge of this barrier. Many stakeholders expressed concern over the impacts of the development on livelihoods, the local economy and property prices, however none articulated these aspects as having a negative impact on their participation experience.																		
Expert/elitist approach to EA.	EIA [1]	ANR [1]	ASR [1]	EIA []	ANR []	ASR []	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]			
	FWR [1]	VSR [1]	TSR [1]	FWR []	VSR []	TSR []	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]			
	SES [1]	C&R [2]	EMP [1]	SES []	C&R []	EMP []	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	EIA [1]	EMP [1]	
The C&R report mentions the challenge associated with difficulties regarding the technical and expert driven exercise of specialist studies that were treated with scepticism by many stakeholders. However, the reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Some stakeholders are recorded in the reports as having suspicion regarding the scientific studies, however these complaints are not linked to affecting their participation experience.																		
Length of comment periods.	EIA [1]	ANR [1]	ASR [1]	EIA []	ANR []	ASR []	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]			
	FWR [1]	VSR [1]	TSR [1]	FWR []	VSR []	TSR []	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]			
	SES [1]	C&R [3]	EMP [1]	SES []	C&R []	EMP []	SES [1]	C&R [3]	EMP [1]	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	EIA [1]	EMP [1]	
The C&R report mentions the challenge associated with difficulties with the length of comment periods. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Some stakeholders are recorded in the reports with complaints regarding the length of the comment periods affecting their participation experience – however, these issues raised are not compensated or provided for.																		
Emerging participatory democracy.	EIA [1]	ANR [1]	ASR [1]	EIA []	ANR []	ASR []	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]			
	FWR [1]	VSR [1]	TSR [1]	FWR []	VSR []	TSR []	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]			
	SES [1]	C&R [1]	EMP [1]	SES []	C&R []	EMP []	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	EIA [1]	EMP [1]	
No report mentions the challenge associated with difficulties associated with an emerging participatory democracy. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. No stakeholders are recorded in the reports with complaints regarding the emerging participatory democracy affecting their participation experience.																		
Locus standi.	EIA [2]	ANR [1]	ASR [1]	EIA []	ANR []	ASR []	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]			
	FWR [1]	VSR [1]	TSR [1]	FWR []	VSR []	TSR []	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]			
	SES [1]	C&R [3]	EMP [1]	SES []	C&R []	EMP []	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	EIA [1]	EMP [1]	
The EIA and C&R reports mention the challenge associated with difficulties around *locus standi*. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. No stakeholders are recorded in the reports with complaints regarding *Locus standi* affecting their participation experience.																		
No guarantee of formal participation.	EIA [2]	ANR [1]	ASR [1]	EIA []	ANR []	ASR []	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]			
	FWR [1]	VSR [1]	TSR [1]	FWR []	VSR []	TSR []	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]			
	SES [1]	C&R [3]	EMP [1]	SES []	C&R []	EMP []	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	EIA [1]	EMP [1]	
The EIA and C&R reports mention the challenge associated with difficulties regarding formal participation guarantees. However, the reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Some stakeholders frame their objections to the development out of concern that despite engaging with the public participation process they do not feel confident that their concerns would be incorporated into the decision making.																		
'Invisible' stakeholders.	EIA [1]	ANR [1]	ASR [1]	EIA []	ANR []	ASR []	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]			
	FWR [1]	VSR [1]	TSR [1]	FWR []	VSR []	TSR []	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]			
	SES [1]	C&R [1]	EMP [1]	SES []	C&R []	EMP []	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	EIA [1]	EMP [1]	
No report mentions the challenge associated with difficulties around 'invisible' stakeholders. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Despite the socio-economic profile of the local community no stakeholders are recorded in the reports with complaints regarding 'invisible' stakeholders affecting their participation experience.																		
Inadequate scientific knowledge (Data deficient	EIA [2]	ANR [1]	ASR [1]	EIA []	ANR []	ASR []	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]	EIA [1]	EMP [1]	

etc.).	FWR [2]	VSR [1]	TSR [1]	FWR []	VSR []	TSR []	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]			
	SES [1]	C&R [5]	EMP [1]	SES []	C&R []	EMP []	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]			
The EIA, FWR and C&R reports discuss and identify the challenge associated with inadequate scientific knowledge. However, the reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Stakeholders base some of their objection arguments on inadequate scientific knowledge in the FWR and EIA however these objections are not linked to their ability or provisions for participation.																		
Lack of public capacity support, education & empowerment for participation.	EIA [1]	ANR [1]	ASR [1]	EIA []	ANR []	ASR []	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]			
	FWR [1]	VSR [1]	TSR [1]	FWR []	VSR []	TSR []	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]			
	SES [1]	C&R [1]	EMP [1]	SES []	C&R []	EMP []	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	EIA [1]	EMP [1]	
No report mention the challenge associated with capacity support, education & empowerment for participation. However, the reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. No stakeholders are recorded in the reports to asking for, or citing, regulatory expectations for capacity support, education & empowerment for participation.																		
Inappropriate language used.	EIA [1]	ANR [1]	ASR [1]	EIA []	ANR []	ASR []	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]			
	FWR [1]	VSR [1]	TSR [1]	FWR []	VSR []	TSR []	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]			
	SES [1]	C&R [1]	EMP [1]	SES []	C&R []	EMP []	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	EIA [1]	EMP [1]	
No report mentions the challenge associated with difficulties around the appropriate language used. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. No stakeholders are recorded in the reports with complaints regarding inappropriate language affecting their participation experience.																		
Other Aspects:																		
HIV/AIDS.	EIA [1]	ANR [1]	ASR [1]	EIA []	ANR []	ASR []	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]			
	FWR [1]	VSR [1]	TSR [1]	FWR []	VSR []	TSR []	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]			
	SES [1]	C&R [1]	EMP [1]	SES []	C&R []	EMP []	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	EIA [1]	EMP [1]	
No report mentions the challenge associated with difficulties associated with HIV/AIDS. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. No stakeholders are recorded in the reports with complaints regarding HIV/AIDS affecting their participation experience																		
Inadequate internet and email connectivity.	EIA [1]	ANR [1]	ASR [1]	EIA []	ANR []	ASR []	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]			
	FWR [1]	VSR [1]	TSR [1]	FWR []	VSR []	TSR []	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]			
	SES [1]	C&R [1]	EMP [1]	SES []	C&R []	EMP []	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	EIA [1]	EMP [1]	
No report mentions the challenge associated with difficulties associated with internet and email connectivity. The reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. No stakeholders are recorded in the reports with complaints regarding internet and email connectivity affecting their participation experience.																		
Inadequate personal time for participation.	EIA [1]	ANR [1]	ASR [1]	EIA []	ANR []	ASR []	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]			
	FWR [1]	VSR [1]	TSR [1]	FWR []	VSR []	TSR []	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]			
	SES [1]	C&R [1]	EMP [1]	SES []	C&R []	EMP []	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	EIA [1]	EMP [1]	
Time for participation is mentioned superficially as a challenge to the process in the SR and the EMP. However, no report identifies nor discusses the challenges associated with time for participation and the reports do not identify it as a relevant issue nor do they identify it as irrelevant. The barrier is not mentioned nor integrated in any report. Some stakeholders are recorded in the reports with complaints regarding time for reading and commenting on reports affecting their participation experience.																		
Poverty and Unemployment	EIA [3]	ANR [1]	ASR [1]	EIA []	ANR []	ASR []	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]	EIA [1]	ANR [1]	ASR [1]			
	FWR [1]	VSR [1]	TSR [1]	FWR []	VSR []	TSR []	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]	FWR [1]	VSR [1]	TSR [1]			
	SES [3]	C&R [2]	EMP [2]	SES []	C&R []	EMP []	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	SES [1]	C&R [1]	EMP [1]	EIA [1]	EMP [1]	
The EIA, SES, C&R and EMP reports mention the challenge associated with job creation imperatives and economic growth. The C&R report mentions it occasionally and the EIA discusses the barrier. The reports do not identify it as a relevant issue. Many stakeholders expressed concern over the impacts of the development on livelihoods, the local economy and property prices, however none articulated these aspects as having a negative impact on their participation experience.																		

7.1.6.2 Case Study 4 Report Analysis Part C: Articulations of 'functional capabilities' in the MINE EIA reports

'Functional Capabilities' (Clark, 2003: 186)		Report	Emphasis Unsure [0], Never [1], Superficially [2] Occasionally [3], In detail [4] Substantially [5]	Quote from Report (example)
1	Jobs	C&R EIA, EMP	In detail [4]	"the mine will not accommodate any workers on site, all labour will be sourced from the nearby labour sending towns with the Saldanha Bay Municipality. This further informed the location of the mine's main access road to the R45, so as to include towns like Hopefield." "The breakdown of people employed in terms of low skilled, semi-skilled and skilled are estimated at 40:40:20" "approximately 800 jobs will be created in the construction phase and approximately 300 permanent jobs during the operation phase of the mine. Part of the social and labour plan indicates upskilling of the labour force which will be from the adjacent labour sending towns." "At full production, annual costs associated with the mining activity are estimated to be in the order of USD800million, of which R430million is direct labour costs. Of the total expenditure, approximately 40% is targeted to be spent on BEE / HDSA suppliers and contractors at full production." "Some 56.5% of the WCDM population is not economically active. Of those who are, roughly 141 177 (or 36% of the WCDM

				population) were employed and 24 204 (or 6.2% of the population) were unemployed, while 5 524 (or 1.4% of the population) were discouraged job seekers in 2011 (Census, 2011). As such, approximately 14% of the economically active population in the WCDM was unemployed." "Skilled and semi-skilled labour recruitment will primarily focus on the local communities and will focus on Historically Disadvantaged South Africans ("HDSA") and Women in Mining ("WIM"). It is planned that the requirements of the Mining Charter, with staffing for HDSA at 40% and 30% WIM (target is 10%)"
2	Access to clean water and sanitation	C&R SES	Occasionally [3]	"site falls within the buffer zone of the West Coast National Park. Buffer zones are essential for SANParks to achieve their national objectives which includes protection of biodiversity and ecosystem services, probably the most important of which is provision of clean water. The area in which the proposed mining is to take place has been considered vital to the park's expansion strategy since before the current landowners purchased the land and applicants/landowners were aware that the site is of high conservation value before they purchased it." "EEM has entered into an agreement with the municipality, to be provided with treated effluent water from the Vredenburg Waste Water Treatment Works (WWTP). The effluent water will be re-processed at the WWTP, to ensure that water of a suitable quality supplied to the mine." "Whilst the provision of Sanitation and Refuse Removal are at acceptable levels, the delivery of electricity and water requires attention"
3	Housing and shelter	C&R SES	Occasionally [3]	"if jobs are provided to people outside of local communities, with accompanying influx of labour from other areas, competition for jobs is likely to increase. In addition, the other negative impacts listed such as increased demand for housing and services, loitering, safety risks, increase in crime and other social conditions in combination with the above." "No permanent accommodation will be constructed on site as workers will be recruited from the nearby local communities." "Most of the population of Ward 7 (94%), SBM (78%) and WCDM (79%) live in a house or brick structure on a separate stand or yard. There are minimal informal dwellings in Ward 7 when compared to 10% in the WCDM and 17% in the SBM."
4	Family and friends		Never [1]	
5	Personal safety and physical security	C&R	Superficially [2]	"if jobs are provided to people outside of local communities, with accompanying influx of labour from other areas, competition for jobs is likely to increase. In addition, the other negative impacts listed such as increased demand for housing and services, loitering, safety risks, increase in crime and other social conditions in combination with the above."
6	An education	EMP	Occasionally [3]	"in partnership with the local municipality, local education will develop a Training Plan that enhances skills in the area in line with the Project's Social and Labour Plan. The Plan should: Identify the skills gaps (between existing skills and Project needs) and initiate mechanisms to train local people to meet the Project's needs; Identify the particular needs of the youth and women, based on feedback from stakeholders; and Prioritise the youth and women for training programs. EEM will develop and implement a detailed Stakeholder Consultation and Engagement Plan (SCEP) that identifies all defines responsibility for these activities. This plan should be updated on an annual basis". "over R100 million will be used to establish a 'Green Fund' that will be used to promote education and conservation of biodiversity and natural resources, and provide long term sustainable employment that will continue post mine closure." "The majority of the residents do have some schooling with 16% to 20% of people having passed Grade 12. However, the representation of the community with higher education is quite low at 6%."
7	Happiness		Never [1]	
8	Good health		Never [1]	
9	Sleep and rest		Never [1]	
10	Fuel for cooking and heating	EMP	Superficially [2]	"Any cooking on site shall be done on well-maintained gas cookers with fire extinguishers present." "Security staff must be provided with heating and cooking facilities (in order that they do not need to light fires), and access to toilet facilities and communication equipment."
11	Access to family planning			
12	Exercise		Never [1]	
13	Capacity to think, reason and make choices	C&R EMP	Occasionally [3]	"CBAs represent the best available science and for that reason need to be considered in decision-making." "buffer zones are a legal mechanism that, as with National Parks and other proclaimed protected areas, represents an expression of socio-political values. These zones are deemed necessary for National Parks to achieve their objectives. To this end a mining operation does not sound compatible with the rationale behind buffer zones." Response "SANParks confirmed that the buffer zone has not yet been gazetted." "there are some broad statements in the report that require supporting references or evidence. The report does not flow and in certain places it is very technical with both jargon from geologists, botanists and mines. This makes it very difficult for a lay person (or specialist from an unrelated field) to read, interpret and comment on the report." "On an internal appeal, the Minister of the DMR withdrew the decision of the DG to dismiss the appeal against the refusal of a prospecting right. The Minister granted the prospecting application on 30 April 2013 on the grounds that: "The reason for the reversal of the refusal decision is based on a reassessment of the environmental management issues and …the new information submitted by the Applicant … The "new information " submitted by EEM indicated, inter alia, that there are no proclaimed critical biodiversity areas (CBAs) in the Western Cape, and that the mitigation measures are adequate" "[Mine Location] Portion 4 is the only new viable large scale phosphate mine in South Africa. Of the ten known deposits, five would not be mined due to environmental reasons, and four are too small to support a mining operation."
14	Sexual satisfaction		Never [1]	
15	Basic clothing		Never [1]	
16	Fashionable clothing		Never [1]	
17	Freedom for self-determination		Never [1]	
18	Income and wealth	C&R SES	Occasionally [3]	"the lagoon provides an important source of income for local fishermen and is a very important tourist attraction for the region." "Direct household income impacts would flow from all wages, estimated at USD10 – 15 million (including manufacturing labour) paid during construction. Approximately R80 million of this total would probably accrue to workers currently resident in Hopefield". "Asked whether they think their businesses would be able to benefit from the proposed phosphate mine, the greater majority (84%) reacted positively" – only 24 people in Hopefield interviewed "On the question if they would support the development of proposed phosphate mine it was again the majority (87.5%) that responded positively," – only 24 people interviewed "The majority of residents in Ward 7 (74%), SBM (63%) and WCDM (53%) own their dwellings with them being either fully paid off already or in the process of being paid off. Alternatively a large number of the population rent their homes." "between 27% and 31% of households in Ward 7, SBM and the

				WCDM, earning between zero and R19 600, 23% to 27% earning R76 401 – R307 600 and only 1% earning more than R1 228 800 per annum"
19	Consumer durable and luxury goods		Never [1]	
20	Self-respect		Never [1]	
21	Land and cattle		Never [1]	
22	Living in a clean and natural environment	EMP	In detail [4]	"impact of dust, noise generation, spread of alien species, loss of threatened species and habitats, possible decrease in natural beauty and aesthetics of the area should also be investigated." "No mention is made of possible socio-economic impacts of pollution of the aquifer and what impact this might have on natural areas (including the national park, and RAMSAR wetland site) as well as tourism industry that is dependent on these natural sites." "The Code of Conduct should address the following aspects, as a minimum: respect for the natural environment and no littering or illegal dumping". "The destruction of the natural environment is unavoidable if the extraction of the phosphate is to proceed. The proposed offsets do not add to the natural capital but it does provide for formal protection and conservation of areas not currently protected. Integrated rehabilitation offers a good opportunity to restore the post-mining environment to a functional ecological state that will be similar in appearance to the current landscape although it will not be as complex and diverse. The post rehabilitation environment will be in a suitable state to manage as part of a National Park after three growing seasons following the final rehabilitation." "Western Cape Provincial Spatial Development Framework (PSDF) … Environmental Sustainability Objective: Minimise the consumption of scarce environmental resources, particularly water, fuel, building materials, mineral resources, electricity and land – in the latter case especially pristine and other rural land, which is the Province's 'goldmine -above-the- ground'
23	Coca-Cola (or other fizzy drink)		Never [1]	
24	Transportation		Superficially [2]	"Housing, transport and amenities for labour are not dealt with in any detail in the report"
25	(All weather) roads		Superficially [2]	"all labour will be sourced from the nearby labour sending towns with the Saldanha Bay Municipality. This further informed the location of the mine's main access road to the R45, so as to include towns like Hopefield."
26	Watching sport		Never [1]	
27	Playing sport		Never [1]	
28	Electricity		Superficially [2]	"Whilst the provision of Sanitation and Refuse Removal are at acceptable levels, the delivery of electricity and water requires attention"
29	Free time/recreation		Never [1]	
30	Having children		Never [1]	
31	Watching TV/going to the cinema		Never [1]	
32	Drinking alcohol		Never [1]	
33	Living long		Never [1]	
34	Smoking cigarettes		Never [1]	
35	Property rights (the right to own personal property)	C&R	Superficially [2]	"We are the owners of Savico Game Lodge and would like info on the project and most of all the road that EEM plants to build right next to our property. We have questions and concerns that we would like to address and be clear on also the finale decisions made where it does concern us."
36	Equal opportunities for personal advancement	EIA EMP	Superficially [2]	"Fifteen years is deemed to be the minimum acceptable life cycle for meaningful contribution by the mine to the local economy, and to establish sustainable training and development and employment opportunities". "Skilled and semi-skilled labour recruitment will primarily focus on the local communities and will focus on Historically Disadvantaged South Africans ("HDSA") and Women in Mining ("WIM"). It is planned that the requirements of the Mining Charter, with staffing for HDSA at 40% and 30% WIM (target is 10%)"
37	Determination, motivation, self-reliance		Never [1]	
38	Participate in political activities that affect your life	EIA EMP	Superficially [2]	"Given the sensitivities around the biodiversity associated with the Project location and high rate of unemployment in the region, it is important that stakeholders from the district and local municipalities, environmental bodies and landowners are given the opportunity to participate in the process."

7.1.7 Case Study 5: REDZ Wind & Solar SEA Report Analysis

7.1.7.1 Case Study 5 Report Analysis Part C: Articulations of 'functional capabilities' in the REDZ reports

‘Functional Capabilities’ (Clark, 2003: 186)		Report	Emphasis Unsure [0], Never [1], Superficially [2] Occasionally [3], In detail [4] Substantially [5]	Quote from Report (example)
1	Jobs	P1	Superficially [2]	“The normalization Criteria (pull factors) determining the development potential in delineating the SEA is … Seat of local municipalities with high social need”. “Key pull factors including transmission loss, local municipalities with high social need and high potential for development, priority areas for renewable energy manufacturing and import activities, and existing transmission infrastructure were considered for the adjustment of the resource dataset”
2	Access to clean water and sanitation	P1	Superficially [2]	“The normalization Criteria (pull factors) determining the development potential in delineating the SEA is … Seat of local municipalities with high social need”
3	Housing and shelter	P1	Superficially [2]	“The normalization Criteria (pull factors) determining the development potential in delineating the SEA is … Seat of local municipalities with high social need”
4	Family and friends	P1	Superficially [2]	
5	Personal safety and physical security	P1	Superficially [2]	“The normalization Criteria (pull factors) determining the development potential in delineating the SEA is … Seat of local municipalities with high social need”
6	An education	MM	Superficially [2]	“The social spend from clusters of projects can be pooled and reinvested in the community through necessary developments, i.e. schools, clinics, etc.”
7	Happiness		Never [1]	
8	Good health	P1	Superficially [2]	“The normalization Criteria (pull factors) determining the development potential in delineating the SEA is … Seat of local municipalities with high social need”
9	Sleep and rest		Never [1]	
10	Fuel for cooking and heating		Never [1]	
11	Access to family planning	P1	Superficially [2]	“The normalization Criteria (pull factors) determining the development potential in delineating the SEA is … Seat of local municipalities with high social need”
12	Exercise		Never [1]	
13	Capacity to think, reason and make choices	MM SP, P1	Occasionally [3]	“The majority of game reserves are not against wind RE in general but wind energy projects cannot be built in areas where game farming occurs. The issue is finding the right areas for developing RE projects”. “We as game farmers have pushed for a socio-economic study in the area and would like to be in contact with the specialist responsible for the socio-economic study to provide the information”. “The SEA is creating special land uses to allow for industrialisation of rural land.”. “Integrative role of the SEA is focusing on combining environmental, social and economic considerations”
14	Sexual satisfaction		Never [1]	
15	Basic clothing		Never [1]	
16	Fashionable clothing		Never [1]	
17	Freedom for self-determination	MM	Occasionally [3]	“The aim is to incentivize development in the least sensitive areas within the focus areas. The SEA aims at ensuring that wind and solar PV energy are rolled out without inducing major environmental impacts.” “The existence of game farms in the area has been noted as an issue which needs to be addressed. For the privately owned game farms, it is up to the land owner to decide if they want RE development on their game farm.” “This study is promoting an area without knowing how the land owners feel about RE projects occurring on their land.” Response “Development of wind and solar PV energy is incentivized in those areas at a national strategic level however the negotiation for the specific land parcels within the focus areas is up to the land owners.” “Now the SEA is four years late. The map of the focus area has not taken into consideration game farms in the area as exclusion zones. It looks like game farms are an afterthought in the SEA process.”
18	Income and wealth	MM SP	In detail [4]	“There should be proof of money paid every year to the communities that these projects have promised to assist. The whole process should be documented in an orderly manner.” “A strategic decision was taken by the DoE and Treasury regarding the social spend from RE project developments, i.e. a certain percentage of the income derived from RE projects must be reinvested in the community. Developers themselves decide how the money should be re-invested in the local community. The second method was chosen because the community would be able to see the direct benefits of the development rather than money being channeled via the municipality. It is beyond the scope of the SEA to address questions regarding the finance from RE development because the decision is made by DoE and Treasury.” “The strategic Integrated Projects (SIPs) needs analysis targets infrastructure support for economic development and trade whilst simultaneously addressing the needs of the poor.”
19	Consumer durable and luxury goods		Never [1]	
20	Self-respect		Never [1]	
21	Land and cattle	MM	Superficially [2]	“…As a game farmer I do not want any part of this project. This project is removing the processes that allow for game farmers to object to any RE projects occurring on their land as it aims to incentivize development in focus areas.”
22	Living in a clean and natural environment	MM	Occasionally [3]	“The aim is to incentivize development in the least sensitive areas within the focus areas. The SEA aims at ensuring that wind and solar PV energy are rolled out without inducing major environmental impacts.” “Clustering of development is naturally occurring in South Africa, but the development within an area still needs to be controlled to prevent ‘a forest of turbines’. The SEA will examine cumulative impacts of development. Density thresholds for development within an area will be determined to ensure that cumulative impacts are

				below the maximum level. An EIA is conducted for an individual project and does not examine cumulative impacts."
23	Coca-Cola (or other fizzy drink)		Never [1]	
24	Transportation		Never [1]	
25	(All weather) roads		Never [1]	
26	Watching sport		Never [1]	
27	Playing sport		Never [1]	
28	Electricity	MM SED	In detail [4]	"The lack of grid capacity in the study areas may force developers to stay away from the incentivized focus areas and go to areas where resources are available. These focus areas will not stop developers from developing outside the REDZs where wind resources are abundant and the financial model makes sense". "The South African Government's strong commitment to the roll-out of renewable energy, in combination with the overriding success of the REI4P, raises questions as to how the growing spatial extent of renewable energy development in South Africa can be managed sustainably". "Key pull factors including transmission loss, local municipalities with high social need and high potential for development, priority areas for renewable energy manufacturing and import activities, and existing transmission infrastructure were considered for the adjustment of the resource dataset". "the SEA participates to the national social, economic and political goals as described in the South African National Development Plan (NDP), New Growth Path (NGP) for South Africa and National Infrastructure Plan (NIP). Under the NIP, 18 Strategic Integrated Projects (SIPs) have been developed to promote fast-tracked development and growth of social and economic infrastructure across all nine provinces."
29	Free time/recreation		Never [1]	
30	Having children		Never [1]	
31	Watching TV/going to the cinema		Never [1]	
32	Drinking alcohol		Never [1]	
33	Living long		Never [1]	
34	Smoking cigarettes		Never [1]	
35	Property rights (the right to own personal property)	MM	Superficially [2]	"…As a game farmer I do not want any part of this project. This project is removing the processes that allow for game farmers to object to any RE projects occurring on their land as it aims to incentivize development in focus areas."
36	Equal opportunities for personal advancement		Never [1]	
37	Determination, motivation, self-reliance	MM	Superficially [2]	"The IRP allocates an amount of energy that needs to be generated, but not where the energy should be generated. A developer can go anywhere in South Africa and negotiate a price with the landowner. Developers go to landowners, sign agreements with the landowners, develop project for that specific piece of land, get all authorisations in place and then approach the DoE and bid on the project. It is a tender process and all projects across the country compete with each other."
38	Participate in political activities that affect your life	MM	In detail [4]	"Game farmers and game ranchers should be consulted more on RE development projects. The development of a project should be documented clearly." "The study should include consultation with all the affected game farmers. We request that you sterilize the area so that RE projects do not occur. As a game farmer I do not want any part of this project. This project is removing the processes that allow for game farmers to object to any RE projects occurring on their land as it aims to incentivize development in focus areas." Response "The question the study is attempting to answer is not whether RE projects should take place or not but rather where RE projects should take place." "Does the SEA process take away the Environmental Impact Assessment (EIA) process?" response "All RE projects proposed outside the REDZs will still follow the current EIA process. Development occurring in the REDZs will still need to obtain an Environmental Authorisation (EA) under NEMA, but the further assessment that will take place will depend on whether the development is being proposed in a less sensitive (green) area or a highly sensitive (red) area. The authorisation process should be less laborious for the low sensitive areas and thus development would be incentivised to occur in the less sensitive areas. There will always be public participation on the ground to be undertaken as part of this Environmental Authorisation process." "Will there be an opportunity for the public to input directly to specialist studies which will occur?" response: "the public can provide local knowledge to specialists via the CSIR. For instance, one can send shapefiles or kmz file of land parcels which should be red flagged for business activities reason (game farming) or ecological reasons. Spatial data is needed because the project works with GIS and will need to integrate this data with the dataset used in the SEA thus far. CSIR, DEA, SANBI, and Birdlife South Africa are currently working together on a "birds and bats monitoring tool" where data can be provided by local experts, and the public. The data will then be verified and standardized, and uploaded onto an online platform where and the data and the tool will be available to the large the public." "We have tracked socio-economic development in this area for 15 years and would like to contribute to the information the specialist will use." "The public should get the opportunity to comment on the comments made by developers." "With regards to the process undertaken in the SEA, I see that it is developer-oriented as developers have been consulted first and then environmental sensitivities are being considered after. Should the process not have begun with environmental concerns now the project is approaching the public at such a late stage?" response: "This is incorrect the SEA is not developer-oriented. The SEA aims at combining the 3 spheres of sustainability namely Environmental, Economic, and Social Components. The vision of the SEA is "Wind and Solar PV projects in South Africa are developed in an efficient and effective manner that avoids significant environmental impacts and optimises the social and economic benefits, resulting in projects that are supported by strategic planning, endorsed by government, embraced by stakeholders, and attractive to investors."." "There have been a few people saying they were not notified of this public meeting, are you going to improve the public participation communication methods?" Response: "The public meetings were advertised in various newspapers covering the extent of the SEA, invitations to the public meetings were circulated to all registered project stakeholders, announcement of the public meetings were posted on the project website, and finally four of our interns spent few days phoning various stakeholders including SALGA, farmers associations, schools, libraries, workers associations, tourism agencies, clinics and other local business and associations as included on each municipality's general stakeholder lists.

				The SEA team really did its best to inform the larger public of the public meetings but it is obvious that not all stakeholders can be contacted... We welcome all meaningful input in the project. If one signs the register, they will be added to the I&APs database and anyone can be an I&AP." "There is a battle to hear properly in the chosen venue. Can better venues be chosen where the acoustics are better? There are many other suitable venues in the town which could have been used."

7.1.8 Emphasis of functional capabilities in the reports All Cases

Never mentioned [1]	Superficially mentioned [2]	Occasionally mentioned [3]	Discussed in detail [4]

	Clark's 'functional capabilities' (Clark, 2003, p. 186) (List ranked according to normative evaluation)	**Case Study 1: PARK**	**Emphasis**	**Case Study 2: GAS**	**Emphasis**	**Case Study 3: WIND**	**Emphasis**	**Case Study 4: MINE**	**Emphasis**	**Case Study 5: REDZ SEA**	**Emphasis**
1	Jobs	In detail	4	Occasionally	3	In detail	4	In detail	4	Superficially	2
2	Access to clean water and sanitation	In detail	4	Never	1	Superficially	2	Occasionally	3	Superficially	2
3	Housing and shelter	In detail	4	Never	1	Superficially	2	Occasionally	3	Superficially	2
4	Family and friends	Occasionally	3	In detail	4	Never	1	Never	1	Superficially	2
5	Personal safety and physical security	In detail	4	In detail	4	Occasionally	3	Superficially	2	Superficially	2
6	An education	Superficially	2	Never	1	In detail	4	Occasionally	3	Superficially	2
7	Happiness	Never	1	Superficially	2	Superficially	2	Never	1	Never	1
8	Good health	Occasionally	3	Superficially	2	In detail	4	Never	1	Superficially	2
9	Sleep and rest	Never	1	Never	1	In detail	4	Never	1	Never	1
10	Fuel for cooking and heating	In detail	4	Superficially	2	Superficially	2	Superficially	2	Never	1
11	Access to family planning	Never	1	Never	1	Never	1	Never	1	Superficially	2
12	Exercise	Occasionally	3	Never	1	Never	1	Never	1	Never	1
13	Capacity to think, reason and make choices	Superficially	2	In detail	4	In detail	4	Occasionally	3	Occasionally	3
14	Sexual satisfaction	Never	1	Never	1	Never	1	Never	1	Never	1
15	Basic clothing	Never	1	Never	1	Never	1	Never	1	Never	1
16	Fashionable clothing	Never	1	Never	1	Never	1	Never	1	Never	1
17	Freedom for self-determination	Never	1	Never	1	Never	1	Never	1	Occasionally	3
18	Income and wealth	Superficially	2	Occasionally	3	Occasionally	3	Occasionally	3	In detail	4
19	Consumer durable and luxury goods	Never	1	Never	1	Never	1	Never	1	Never	1
20	Self-respect	Never	1	Never	1	Never	1	Never	1	Never	1
21	Land and cattle	In detail	4	Never	1	Occasionally	3	Never	1	Superficially	2
22	Living in a clean and natural environment	In detail	4	In detail	4	Occasionally	3	In detail	4	Occasionally	3
23	Coca-Cola (or other fizzy drink)	Never	1	Never	1	Never	1	Never	1	Never	1
24	Transportation	Occasionally	3	Never	1	Superficially	2	Superficially	2	Never	1
25	(All weather) roads	Occasionally	3	Superficially	2	Superficially	2	Superficially	2	Never	1
26	Watching sport	Never	1	Superficially	2	Never	1	Never	1	Never	1
27	Playing sport	Occasionally	3	Occasionally	3	Never	1	Never	1	Never	1
28	Electricity	Superficially	2	Occasionally	3	In detail	4	Superficially	2	In detail	4
29	Free time/recreation	In detail	4	In detail	4	Occasionally	3	Never	1	Never	1
30	Having children	Superficially	2	Superficially	2	Never	1	Never	1	Never	1
31	Watching TV/going to the cinema	Never	1	Never	1	Never	1	Never	1	Never	1
32	Drinking alcohol	Never	1	Never	1	Never	1	Never	1	Never	1
33	Living long	Never	1	Occasionally	3	Never	1	Never	1	Never	1
34	Smoking cigarettes	Never	1	Never	1	Never	1	Never	1	Never	1
35	Property rights (the right to own personal property)	Superficially	2	In detail	4	Occasionally	3	Superficially	2	Superficially	2
36	Equal opportunities for personal advancement	Never	1	Never	1	Never	1	Superficially	2	Never	1
37	Determination, motivation, self-reliance	Never	1	In detail	4	Occasionally	3	Never	1	Superficially	2
38	Participate in political activities that affect your life	Superficially	2	Occasionally	3	In detail	4	Superficially	2	In detail	4

7.1.9 Articulations of functional capabilities in the reports All Cases

Never mentioned	Superficially mentioned	Occasionally mentioned	Discussed in detail

Clark's 'functional capabilities' (Clark, 2003: 186)	1 Jobs	2 Access to clean water and sanitation	3 Housing and shelter	4 Family and friends	5 Personal safety and physical security	6 An education	7 Happiness	8 Good health	9 Sleep and rest	10 Fuel for cooking and heating	11 Access to family planning	12 Exercise	13 Capacity to think, reason and make choices	14 Sexual satisfaction	15 Basic clothing	16 Fashionable clothing	17 Freedom for self-determination	18 Income and wealth	19 Consumer durable and luxury goods	20 Self-respect	21 Land and cattle	22 Living in a clean and natural environment	23 Coca-Cola (or other fizzy drink)	24 Transportation	25 (All weather) roads	26 Watching sport	27 Playing sport	28 Electricity	29 Free time/recreation	30 Having children	31 Watching TV/going to the cinema	32 Drinking alcohol	33 Living long	34 Smoking cigarettes	35 Property rights (the right to own personal property)	36 Equal opportunities for personal advancement	37 Determination, motivation, self-reliance	38 Participate in political activities that affect your life
Case Study 1: PARK	4	4	4	3	4	2	1	3	1	4	1	3	2	1	1	1	1	2	1	1	4	4	1	3	3	1	3	2	4	2	1	1	1	1	2	1	1	2
Case Study 2: GAS	3	1	1	4	4	1	2	2	1	2	1	1	4	1	1	1	1	3	1	1	1	4	1	1	2	2	3	3	4	2	1	1	3	1	4	1	4	3
Case Study 3: WIND	4	2	2	1	3	4	2	4	4	2	1	1	4	1	1	1	1	3	1	1	3	3	1	2	2	1	1	4	3	1	1	1	1	1	3	1	3	4
Case Study 4: MINE	4	3	3	1	2	3	1	1	1	2	1	1	3	1	1	1	1	3	1	1	1	4	1	2	2	1	1	2	1	1	1	1	1	1	2	2	1	2
Case Study 5: REDZ	2	2	2	2	2	2	1	2	1	1	2	1	3	1	1	1	3	4	1	1	2	3	1	1	1	1	1	4	1	1	1	1	1	1	2	1	2	4
Total	17	12	12	11	15	12	7	12	8	11	6	7	16	5	5	5	7	15	5	5	11	18	5	9	10	6	9	15	13	7	5	5	7	5	13	6	11	15
In detail **4**	3	1	1	1	2	1	0	1	1	1	0	0	2	0	0	0	0	1	0	0	1	3	0	0	0	0	0	2	2	0	0	0	0	0	1	0	1	2
Occasionally **3**	1	1	1	1	1	1	0	1	0	0	0	1	2	0	0	0	1	3	0	0	1	2	0	1	1	0	2	1	1	0	0	0	1	0	1	0	1	1
Superficially **2**	1	2	2	1	2	2	2	2	0	3	1	0	1	0	0	0	0	1	0	0	1	0	0	2	3	1	0	2	0	2	0	0	0	0	3	1	1	2
Never **1**	0	1	1	2	0	1	3	1	4	1	4	4	0	5	5	5	4	0	5	5	2	0	5	2	1	4	3	0	2	3	5	5	4	5	0	4	2	0
Total	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Mean	3,4	2,4	2,4	2,2	3	2,4	1,4	2,4	1,6	2,2	1,2	1,4	3,2	1	1	1	1,4	3	1	1	2,2	3,6	1	1,8	2	1,2	1,8	3	2,6	1,4	1	1	1,4	1	2,6	1,2	2,2	3
Median	4	2	2	2	3	2	1	2	1	2	1	1	3	1	1	1	1	3	1	1	2	4	1	2	2	1	1	3	3	1	1	1	1	1	2	1	2	3
Mode	4	2	2	1	4	2	1	2	1	2	1	1	4	1	1	1	1	3	1	1	1	4	1	1	2	1	1	2	4	1	1	1	1	1	2	1	1	2

7.2 Method 2: Q Method Factor Analyses

7.2.1 Method 2: Q Method Factor Analysis Case Study 1 PARK

Factor Scores with Corresponding Ranks

No.	Statement	No.	Factors 1		2	
1	I did not feel comfortable and safe as a participant	1	-1.33	28	-0.88	25
2	Other stakeholders built my confidence and self esteme	2	0.52	10	-0.88	25
3	I had an equal chance to voice my concerns	3	-0.13	18	0.00	18
4	All important stakeholders took part in the process	4	-1.04	25	-0.44	22
5	Some affected parties could not participate for reason	5	1.54	2	0.44	12
6	I did not have equal access to information	6	0.01	16	0.00	18
7	The discussion format allowed for inclusive participat	7	0.36	11	0.00	18
8	The process did not exclude those less able to articul	8	0.15	13	0.00	18
9	Financial resources were not provided to enable those	9	1.20	5	0.44	12
10	Negotiations (trade-offs) with other stakeholders were	10	-0.92	22	-1.32	28
11	My values and opinions were not discussed	11	-1.19	27	-0.44	22
12	Participants were courteous and respectful of my persp	12	0.92	7	0.88	8
13	Expert knowledge was not valued more highly than local	13	-0.43	20	0.44	12
14	The process does not improve participants' understandi	14	-1.81	30	-0.88	25
15	The stakeholder's interactions promoted a sense of acc	15	0.56	9	0.88	8
16	I found it easy to build trust among the different par	16	0.22	12	0.44	12
17	Learning as a group of stakeholders is only possible w	17	0.90	8	0.88	8
18	The discussions used language which I did not fully un	18	-1.18	26	0.00	18
19	It was easy for me to gain influence in technical disc	19	0.13	14	-1.32	28
20	It was hard to gain influence in discussions but I sti	20	-0.01	17	0.00	18
21	Discussions integrated social, ecological and economic	21	1.17	6	1.32	5
22	Stakeholders with higher education controlled the disc	22	0.13	15	-0.44	22
23	Stakeholders from wealthier positions did not control	23	-0.50	21	-0.44	22
24	Stakeholders that were 'politically connected' control	24	1.38	3	1.32	5
25	Public participation added quality to the sustainabili	25	1.82	1	1.32	5
26	I did not learn new things about environmental problem	26	-0.99	24	-1.32	28
27	I was challenged to change a few things in my lifestyl	27	-0.22	19	1.76	2
28	The EIA public participation process was fair	28	1.26	4	1.76	2
29	The EIA public participation process was not run compe	29	-1.55	29	-1.76	30
30	Relevant information from certain groups was ignored	30	-0.96	23	-1.76	30

7.2.2 Method 2: Q Method Factor Analysis Case Study 2 GAS

Factor Scores with Corresponding Ranks

No.	Statement	No.	Factors 1		2		3		4		5	
1	I did not feel comfortable and safe as a participant.	1	0.45	12	-0.44	22	-1.32	28	1.76	2	-1.76	30
2	Other stakeholders built my confidence and self-esteem	2	0.42	13	0.00	18	1.32	5	-0.88	25	0.88	8
3	I had an equal chance to voice my concerns.	3	-0.90	24	0.88	8	0.88	8	1.32	5	0.88	8
4	All important stakeholders took part in the process.	4	0.90	7	-1.32	28	-0.00	18	0.44	12	0.00	18
5	Some affected parties could not participate for reason	5	0.87	8	1.32	5	0.44	12	-0.44	22	-0.88	25
6	I did not have equal access to information.	6	0.45	12	0.44	12	0.88	8	0.88	8	-1.76	30
7	The discussion format allowed for inclusive participat	7	-0.21	18	-0.88	25	0.44	12	-1.32	28	0.00	18
8	The process did not exclude those less able to articul	8	-0.45	22	-1.76	30	-0.88	25	-1.32	28	-0.44	22
9	Financial resources were not provided to enable those	9	0.00	16	1.32	5	-0.88	25	0.44	12	1.76	2
10	Negotiations (trade-offs) with other stakeholders were	10	-1.14	26	0.44	12	1.32	5	0.88	8	-1.32	28
11	My values and opinions were not discussed.	11	-1.11	25	0.88	8	-1.76	30	1.32	5	-0.88	25
12	Participants were courteous and respectful of my persp	12	0.48	9	0.88	8	0.44	12	0.00	18	1.76	2
13	Expert knowledge was not valued more highly than local	13	1.35	3	-1.32	28	-0.44	22	-1.32	28	0.00	18
14	The process does not improve participants' understandi	14	-1.79	30	-1.32	28	0.88	8	1.32	5	-0.44	22
15	The stakeholder's interactions promoted a sense of acc	15	0.45	12	-1.76	30	-0.00	18	-1.76	30	1.32	5
16	I found it easy to build trust among the different par	16	0.00	16	-0.44	22	-0.44	22	-1.76	30	1.32	5
17	Learning as a group of stakeholders is only possible w	17	-0.90	24	1.32	5	-0.00	18	0.44	12	1.32	5
18	The discussions used language which I did not fully un	18	-0.24	20	-0.88	25	-0.44	22	-0.44	22	0.00	18
19	It was easy for me to gain influence in technical disc	19	0.93	6	0.00	18	-1.32	28	-0.88	25	0.44	12
20	It was hard to gain influence in discussions but I sti	20	-0.21	18	0.44	12	-0.44	22	0.00	18	-0.44	22
21	Discussions integrated social, ecological and economic	21	0.00	16	0.00	18	1.32	5	0.00	18	0.44	12
22	Stakeholders with higher education controlled the disc	22	-1.35	28	1.76	2	-0.00	18	1.76	2	0.00	18
23	Stakeholders from wealthier positions did not control	23	1.14	4	-0.44	22	-0.00	18	0.00	18	0.88	8
24	Stakeholders that were 'politically connected' control	24	-1.79	30	0.44	12	-0.00	18	0.00	18	-0.44	22
25	Public participation added quality to the sustainabili	25	1.79	2	-0.88	25	0.44	12	-0.88	25	0.00	18
26	I did not learn new things about environmental problem	26	-1.35	28	0.00	18	-0.88	25	0.00	18	-1.32	28
27	I was challenged to change a few things in my lifestyl	27	1.11	5	-0.44	22	-1.32	28	0.44	12	-1.32	28
28	The EIA public participation process was fair.	28	-0.24	20	0.00	18	-1.76	30	-0.44	22	0.44	12
29	The EIA public participation process was not run compe	29	1.79	2	0.00	18	1.76	2	0.88	8	0.44	12
30	Relevant information from certain groups was ignored.	30	-0.45	22	1.76	2	1.76	2	-0.44	22	-0.88	25

7.2.3 Method 2: Q Method Factor Analysis Case Study 3 WIND

Factor Scores with Corresponding Ranks

No.	Statement	No.	Factors 1		2		3		4	
1	I did not feel comfortable and safe as a participant	1	-0.00	14	-0.45	22	-0.88	25	-1.32	28
2	Other stakeholders built my confidence and self-esteem	2	-0.24	16	0.48	11	-1.32	28	-0.44	22
3	I had an equal chance to voice my concerns	3	-1.43	30	1.36	4	-0.00	18	0.44	12
4	All important stakeholders took part in the process	4	-0.80	22	-0.14	18	0.88	8	0.00	18
5	Some affected parties could not participate for reason	5	1.20	5	1.13	5	-0.00	18	0.88	8
6	I did not have equal access to information.	6	-0.06	15	0.51	8	-0.44	22	0.44	12
7	The discussion format allowed for inclusive participat	7	-1.15	27	0.37	15	-1.76	30	-0.44	22
8	The process did not exclude those less able to articul	8	-1.31	29	0.48	11	-1.32	28	0.00	18
9	Financial resources were not provided to enable those	9	1.30	4	0.74	6	0.88	8	0.00	18
10	Negotiations (trade-offs) with other stakeholders were	10	1.83	1	1.36	4	1.76	2	1.32	5
11	My values and opinions were not discussed.	11	1.59	2	0.37	15	1.32	5	1.32	5
12	Participants were courteous and respectful of my persp	12	-0.46	18	0.37	15	0.44	12	-0.88	25
13	Expert knowledge was not valued more highly than local	13	-0.92	23	-1.19	25	-0.88	25	-1.32	28
14	The process does not improve participants' understandi	14	0.92	7	1.82	2	1.32	5	-1.32	28
15	The stakeholder's interactions promoted a sense of acc	15	-0.97	25	-1.68	29	0.88	8	-0.44	22
16	I found it easy to build trust among the different par	16	-0.97	24	-1.82	30	0.44	12	-0.44	22
17	Learning as a group of stakeholders is only possible w	17	0.80	9	0.45	12	-0.88	25	0.44	12
18	The discussions used language which I did not fully un	18	-0.74	20	-0.91	24	-0.00	18	0.88	8
19	It was easy for me to gain influence in technical disc	19	-1.20	28	0.51	8	-1.32	28	-0.88	25
20	It was hard to gain influence in discussions but I sti	20	1.03	6	-0.31	21	-0.44	22	0.00	18
21	Discussions integrated social, ecological and economic	21	0.80	8	-1.36	28	-0.44	22	1.76	2
22	Stakeholders with higher education controlled the disc	22	0.75	10	-0.31	21	0.44	12	1.76	2
23	Stakeholders from wealthier positions controlled the d	23	-0.46	17	-1.36	28	-0.00	18	0.00	18
24	Stakeholders that were 'politically connected' control	24	-1.14	26	-0.14	18	-0.00	18	0.00	18
25	Public participation added quality to the sustainabili	25	0.62	12	-0.14	18	-0.00	18	1.32	5
26	I did not learn new things about environmental problem	26	0.69	11	-0.91	24	0.44	12	-1.76	30
27	I was challenged to change a few things in my lifestyl	27	-0.51	19	0.48	11	-1.76	30	0.44	12
28	The EIA public participation process was fair.	28	-0.74	21	-1.22	26	-0.44	22	0.88	8
29	The EIA public participation process was not run compe	29	0.01	13	-0.31	21	1.76	2	-1.76	30
30	Relevant information from certain groups was ignored.	30	1.54	3	1.82	2	1.32	5	-0.88	25

7.2.4 Method 2: Q Method Factor Analysis Case Study 4 MINE

Factor Scores with Corresponding Ranks

No.	Statement	No.	Factors 1		2		3		4		5	
1	I did not feel comfortable and safe as a participant.	1	-1.09	24	1.32	5	0.44	12	-1.76	30	0.44	12
2	Other stakeholders built my confidence and self-esteem	2	-1.40	28	-0.44	22	-0.00	18	-0.44	22	-0.44	22
3	I had an equal chance to voice my concerns.	3	0.02	15	-0.88	25	-0.44	22	0.00	18	0.44	12
4	All important stakeholders took part in the process.	4	0.44	11	0.88	8	-1.32	28	0.44	12	-0.00	18
5	Some affected parties could not participate for reason	5	0.47	9	-0.00	18	1.32	5	-0.44	22	0.88	8
6	I did not have equal access to information.	6	1.59	2	0.44	12	0.88	8	1.32	5	-0.00	18
7	The discussion format allowed for inclusive participat	7	-1.52	29	-0.88	25	-1.76	30	-0.88	25	-0.44	22
8	The process did not exclude those less able to articul	8	-0.24	19	-0.00	18	-1.76	30	-0.88	25	-1.76	30
9	Financial resources were not provided to enable those	9	1.14	5	-0.00	18	0.88	8	0.00	18	1.32	5
10	Negotiations (trade-offs) with other stakeholders were	10	1.16	4	-0.44	22	-0.00	18	1.32	5	1.32	5
11	My values and opinions were not discussed.	11	0.42	12	-0.00	18	0.44	12	0.88	8	1.32	5
12	Participants were courteous and respectful of my persp	12	-0.27	21	0.44	12	-1.32	28	-1.32	28	-0.00	18
13	Expert knowledge was not valued more highly than local	13	-1.34	27	0.88	8	-0.44	22	0.44	12	-1.32	28
14	The process does not improve participants' understandi	14	0.45	10	-0.00	18	1.32	5	0.88	8	-0.00	18
15	The stakeholder's interactions promoted a sense of acc	15	-0.25	20	-0.44	22	-1.32	28	-1.32	28	-0.88	25
16	I found it easy to build trust among the different par	16	-0.50	22	-0.88	25	-0.44	22	-0.88	25	-0.88	25
17	Learning as a group of stakeholders is only possible w	17	-0.21	17	-0.00	18	-0.00	18	-0.44	22	-0.44	22
18	The discussions used language which I did not fully un	18	-0.89	23	-1.32	28	-0.00	18	0.00	18	0.44	12
19	It was easy for me to gain influence in technical disc	19	-1.10	25	-0.44	22	-0.00	18	0.00	18	-0.00	18
20	It was hard to gain influence in discussions but I sti	20	1.27	3	-1.32	28	0.88	8	-0.44	22	-0.88	25
21	Discussions integrated social, ecological and economic	21	1.11	8	0.44	12	0.44	12	0.44	12	-1.32	28
22	Stakeholders with higher education controlled the disc	22	0.03	13	0.88	8	-0.88	25	0.00	18	0.88	8
23	Stakeholders from wealthier positions controlled the d	23	-0.20	16	1.32	5	0.44	12	0.00	18	0.44	12
24	Stakeholders that were 'politically connected' control	24	1.12	7	1.32	5	1.76	2	0.88	8	0.88	8
25	Public participation added quality to the sustainabili	25	-1.81	30	-1.76	30	-0.00	18	-1.32	28	-1.76	30
26	I did not learn new things about environmental problem	26	0.02	15	-1.32	28	-0.88	25	1.76	2	-0.00	18
27	I was challenged to change a few things in my lifestyl	27	-0.24	19	1.76	2	-0.88	25	0.44	12	-0.44	22
28	The MINE public participation process was fair.	28	-1.12	26	-1.76	30	-0.44	22	-1.76	30	-1.32	28
29	The MINE public participation process was not run com	29	1.13	6	1.76	2	1.32	5	1.76	2	1.76	2
30	Relevant information from certain groups was ignored.	30	1.81	1	0.44	12	1.76	2	1.32	5	1.76	2

7.2.5 Method 2: Q Method Factor Analysis Case Study 5 REDZ

Factor Scores with Corresponding Ranks

No.	Statement	No.	Factors 1		2		3		4		5	
1	I did not feel comfortable and safe as a participant.	1	0.22	14	0.44	12	0.44	12	-0.00	18	-1.14	25
2	Other stakeholders built my confidence and self-esteem	2	-0.74	22	-0.88	25	0.00	18	0.44	12	0.00	15
3	I had an equal chance to voice my concerns.	3	-0.41	19	0.88	8	-0.88	25	0.88	8	0.00	15
4	All important stakeholders took part in the process.	4	-0.93	25	-0.44	22	-1.32	28	-0.44	22	-1.37	27
5	Some affected parties could not participate for reason	5	1.27	4	0.00	18	-0.44	22	0.44	12	0.92	9
6	I did not have equal access to information.	6	0.46	9	-0.44	22	0.00	18	-0.88	25	-0.22	18
7	The discussion format allowed for inclusive participat	7	-1.79	30	0.44	12	0.00	18	-1.32	28	-1.39	28
8	The process did not exclude those less able to articul	8	-1.62	29	-0.88	25	-1.32	28	-0.88	25	-0.22	18
9	Financial resources were not provided to enable those	9	1.79	1	1.32	5	1.76	2	1.32	5	1.17	5
10	Negotiations (trade-offs) with other stakeholders were	10	1.73	2	0.00	18	0.00	18	0.88	8	1.39	1
11	My values and opinions were not discussed.	11	1.15	5	0.44	12	-1.76	30	-1.32	28	0.93	7
12	Participants were courteous and respectful of my persp	12	-0.06	18	0.88	8	1.76	2	-0.00	18	1.37	3
13	Expert knowledge was not valued more highly than local	13	-1.40	28	-1.32	28	-1.76	30	-1.76	30	-1.83	30
14	The process does not improve participants' understandi	14	0.37	11	-1.32	28	-0.44	22	-0.88	25	1.36	4
15	The stakeholder's interactions promoted a sense of acc	15	-1.40	28	-0.44	22	0.00	18	0.44	12	-0.22	18
16	I found it easy to build trust among the different par	16	-0.76	23	-0.88	25	0.44	12	-1.76	30	-0.92	24
17	Learning as a group of stakeholders is only possible w	17	0.81	8	0.00	18	0.44	12	-0.00	18	0.00	15
18	The discussions used language which I did not fully un	18	-0.58	20	0.44	12	-0.44	22	-0.44	22	-0.46	22
19	It was easy for me to gain influence in technical disc	19	-0.64	21	-1.32	28	0.88	8	-0.00	18	-1.59	29
20	It was hard to gain influence in discussions but I sti	20	0.98	6	0.00	18	1.32	5	-0.44	22	-0.24	21
21	Discussions integrated social, ecological and economic	21	0.98	7	0.88	8	0.88	8	1.76	2	1.12	6
22	Stakeholders with higher education controlled the disc	22	0.00	17	1.32	5	1.32	5	-0.00	18	0.46	12
23	Stakeholders from wealthier positions controlled the d	23	0.40	10	0.00	18	0.44	12	1.32	5	-0.24	21
24	Stakeholders that were 'politically connected' control	24	0.00	17	-1.76	30	1.32	5	-0.00	18	-0.24	21
25	Public participation added quality to the sustainabili	25	-1.15	26	1.76	2	0.88	8	-1.32	28	0.92	9
26	I did not learn new things about environmental problem	26	0.34	13	-1.76	30	0.00	18	0.44	12	-0.92	24
27	I was challenged to change a few things in my lifestyl	27	0.00	17	1.32	5	-0.88	25	-0.44	22	0.90	10
28	The SEA public participation process was fair.	28	-0.79	24	-0.44	22	-1.32	28	0.88	8	0.46	12
29	The SEA public participation process was not run compe	29	1.40	3	0.00	18	-0.88	25	1.76	2	-1.37	27
30	Relevant information from certain groups was ignored.	30	0.36	12	1.76	2	-0.44	22	1.32	5	1.37	3

7.3 Method 2: Q Method social perspectives of the public participation process

7.3.1 Q Method: Case Study 1 PARK Public Participation Process

Wetlands Park Public Participation Process Q Sort: 2 Social Perspectives (Factors)		
No.	Statistically significant CONSENSUS statements for ALL factors (PARK-PPPro)	Column
1	I did not feel comfortable and safe as a participant	[F1, -3]; [F2, -2]
14	The process does not improve participants' understandings of	[F1, -4]; [F2, -2]
24	Stakeholders that were 'politically connected' controlled th	[F1, 3]; [F2, 3]
25	Public participation added quality to the sustainability of	[F1, 4]; [F2, 3]
28	The EIA public participation process was fair	[F1, 3]; [F2, 4]
29	The EIA public participation process was not run competently	[F1, -4]; [F2, -4]
30	Relevant information from certain groups was ignored	[F1, -2]; [F2, -4]

No.	Factor 1 Agreement Statements (PARK-PPPro)	Z- Score	Column
25	Public participation added quality to the sustainability of	1.820	+4
5	Some affected parties could not participate for reasons that	1.540	+4
24	Stakeholders that were 'politically connected' controlled th	1.384	+3
28	The EIA public participation process was fair	1.257	+3
9	Financial resources were not provided to enable those	1.199	+3
No.	Factor 1 Disagreement Statements (PARK-PPPro)	Z- Score	Column
14	The process does not improve participants' understandings of	-1.820	-4
29	The EIA public participation process was not run competently	-1.540	-4
1	I did not feel comfortable and safe as a participant	-1.384	-3
11	My values and opinions were not discussed	-1.257	-3
18	The discussions used language which I did not fully	-1.175	-3
No.	Factor 1 - Statistically significant DISTINGUISHING statements (PARK-PPPro)	Z- Score	Column
5	Some affected parties could not participate for reasons that	1.540	+4

1. Core Belief

Decisions made reflect a fair and collaborative process which included local perspectives resulting in more sustainable and acceptable outcomes.

2. Secondary Beliefs

Financial assistance would have helped facilitate a broader input from affected parties who could not participate.
Stakeholders that were 'politically connected' controlled the process more than others.

No.	Factor 2 Agreement Statements (PARK-PPPro)	Z- Score	Column
27	I was challenged to change a few things in my lifestyle to	1.759	+4
28	The EIA public participation process was fair	1.759	+4
21	Discussions integrated social, ecological and economic p	1.319	+3
24	Stakeholders that were 'politically connected' controlled	1.319	+3
25	Public participation added quality to the sustainability	1.319	+3
No.	Factor 2 Disagreement Statements (PARK-PPPro)	Z- Score	Column
30	Relevant information from certain groups was ignored	-1.759	-4
29	The EIA public participation process was not run competently	-1.759	-4
10	Negotiations (trade-offs) with other stakeholders were not	-1.319	-3
19	It was easy for me to gain influence in technical discussion	-1.319	-3
26	I did not learn new things about environmental problems	-1.319	-3
No.	Factor 2 - Statistically significant DISTINGUISHING statements (PARK-PPPro)	Z- Score	Column
27	I was challenged to change a few things in my lifestyle to	1.759	+4
19	It was easy for me to gain influence in technical discussion	1.319	-3

1. Core Belief

Decisions made reflect a competent, fair and collaborative process which included local perspectives which integrated economic, social and ecological considerations added quality to the outcomes.

2. Secondary Beliefs

As I learnt new things about the environment through the process I was challenged to change a few things in my lifestyle.
It was not easy for some stakeholders to gain influence in the technical discussions and stakeholders that were 'politically connected' controlled the process more than others.

7.3.2 Q Method: Case Study 2 GAS Public Participation Process

Petro SA Public Participation Process Q Sort: 6 Social Perspectives (Factors)		
No.	Statistically significant CONSENSUS statements for ALL factors	Column
20	It was hard to gain influence in discussions but I still contested for more	[F1, -1]; [F2, -4], [F3, -2]; [F4, -3]; [F5, -1]; [F6, -1]

No.	Factor 1 Agreement Statements (GAS-PPPro)	Z- Score	Column
25	Public participation added quality to the sustainability of	1.795	+4
29	The EIA public participation process was not run competently	1.795	+4
13	Expert knowledge was not valued more highly than local	1.346	+3
23	Stakeholders from wealthier positions did not control the di	1.138	+3
27	I was challenged to change a few things in my lifestyle	1.106	+3
No.	Factor 1 Disagreement Statements (GAS-PPPro)	Z- Score	Column

14	The process does not improve participants' understandings of	-1.795	-4
24	Stakeholders that were 'politically connected' controlled th	-1.795	-4
22	Stakeholders with higher education controlled the discussion	-1.346	-3
26	I did not learn new things about environmental problems that	-1.346	-3
10	Negotiations (trade-offs) with other stakeholders were	-1.138	-3
No.	Factor 1 - Statistically significant DISTINGUISHING statements (GAS-PPPro)	Z- Score	Column
3	I had an equal chance	-0.90	-2
13	Expert knowledge was not valued more highly than local	1.346	3
22	Stakeholders with higher education controlled the discussion	-1.346	-3
24	Stakeholders that were 'politically connected' controlled th	-1.795	-4
Core Belief			
The public participation process was not run competently. It was difficult for all stakeholders to influence the decision making process and expert knowledge was valued more highly than local knowledge. Despite these procedural problems the process added quality to the outcome as it when the developer cancelled the project.			
Secondary Belief			
Stakeholders learnt new things about the challenges faced by the environment and were challenged to make appopriate lifestyle changes.			

No.	Factor 2 Agreement Statements (GAS-PPPro)	Z- Score	Column
22	Stakeholders with higher education controlled the discussion	1.759	+4
30	Relevant information from certain groups was ignored	1.759	+4
5	Some affected parties could not participate for reasons that	1.319	+3
9	Financial resources were not provided to enable those who	1.319	+3
17	Learning as a group of stakeholders is only possible	1.319	+3
No.	Factor 2 Disagreement Statements (GAS-PPPro)	Z- Score	Column
15	The stakeholder's interactions promoted a sense of accountab	-1.759	-4
8	The process did not exclude those less able to articulate th	-1.759	-4
4	All important stakeholders took part in the process	-1.319	-3
13	Expert knowledge was not valued more highly than local	-1.319	-3
14	The process does not improve participants' understandings	-1.319	-3
No.	Factor 2 - Statistically significant DISTINGUISHING statements (GAS-PPPro)	Z- Score	Column
	There Were NO Distinguishing Statements for Factor 2		
Core Belief			
Stakeholders with higher education controlled the discussion and relevant information from certain groups was ignored. Expert knowledge was valued more highly than local knowledge and the process did not excluded those less able to articulate their oppinion.			
Secondary Belief			
Some excluded affected parties could have participated in the process if financial resources were provided for them to do so.			

No.	Factor 3 Agreement Statements (GAS-PPPro)	Z- Score	Column
29	The EIA public participation process was not run competently	1.759	+4
30	Relevant information from certain groups was ignored	1.759	+4
10	Negotiations (trade-offs) with other stakeholders were not	1.319	+3
21	Discussions integrated social, ecological and economic	1.319	+3
2	Other stakeholders built my confidence and self-esteem	1.319	+3
No.	Factor 3 Disagreement Statements (GAS-PPPro)	Z- Score	Column
11	My values and opinions were not discussed	-1.759	-4
28	The EIA public participation process was fair	-1.759	-4
1	I did not feel comfortable and safe as a participant	-1.319	-3
27	I was challenged to change a few things in my lifestyle to	-1.319	-3
19	It was easy for me to gain influence in technical discussion	-1.319	-3
No.	Factor 3 - Statistically significant DISTINGUISHING statements (GAS-PPPro)	Z- Score	Column
	There Were NO Distinguishing Statements for Factor 3		
Core Belief			
The EIA public participation process integrated social, ecological and economic considerations in the decision making but was not run competently and relevant information from certain groups was ignored.			
Secondary Belief			
Negotiations (trade-offs) with other stakeholders were not possible and it was not easy for me to gain influence in technical discussion. Despite these challenges, I felt comfortable and safe as a participant, other stakeholders built my confidence and self-esteem and my values and opinions were discussed.			

No.	Factor 4 Agreement Statements (GAS-PPPro)	Z- Score	Column
1	I did not feel comfortable and safe as a participant	1.759	+4
22	Stakeholders with higher education controlled the discussion	1.759	+4
3	I had an equal chance to voice my concerns	1.319	+3
11	My values and opinions were not discussed	1.319	+3
14	The process does not improve participants' understandings	1.319	+3
No.	Factor 4 Disagreement Statements (GAS-PPPro)	Z- Score	Column
15	The stakeholder's interactions promoted a sense of accountab	-1.759	-4
16	I found it easy to build trust among the different participa	-1.759	-4
8	The process did not exclude those less able to articulate th	-1.319	-3
13	Expert knowledge was not valued more highly than local knowl	-1.319	-3
7	The discussion format allowed for inclusive participation	-1.319	-3
No.	Factor 4 - Statistically significant DISTINGUISHING statements (GAS-PPPro)	Z- Score	Column
1	I did not feel comfortable and safe as a participant	1.759	+4
Core Belief			
I did not feel comfortable and safe as a participant, stakeholder's interactions did not promoted a sense of accountability and I found it difficult to build trust among the different participants.			
Secondary Belief			
Stakeholders with higher education controlled the discussions which did not allow for inclusive participation.			

The process excluded those less able to articulate their oppinion and expert knowledge was valued more highly than local knowledge. Although I had an equal (limited) chance to voice my concerns process does not improve participants' understandings of others' beliefs, values, and perspectives. as my values and opinions were not discussed.

No.	Factor 5 Agreement Statements (GAS-PPPro)	Z- Score	Column
9	Financial resources were not provided to enable those who	1.759	+4
12	Participants were courteous and respectful of my perspective	1.759	+4
15	The stakeholder's interactions promoted a sense of accountab	1.319	+3
16	I found it easy to build trust among the different participa	1.319	+3
17	Learning as a group of stakeholders is only possible when	1.319	+3
No.	Factor 5 Disagreement Statements (GAS-PPPro)	Z- Score	Column
1	I did not feel comfortable and safe as a participant	1.759	-4
6	I did not have equal access to information	1.759	-4
10	Negotiations (trade-offs) with other stakeholders were not p	1.319	-3
27	I was challenged to change a few things in my lifestyle to c	1.319	-3
26	I did not learn new things about environmental problems	-1.319	-3
No.	Factor 5 - Statistically significant DISTINGUISHING statements (GAS-PPPro)	Z- Score	Column
16	I found it easy to build trust among the different participa	1.319	+3
6	I did not have equal access to information	1.759	-4
Core Belief			
I felt comfortable and safe as other stakeholders' interactions promoted a sense of trust, accountability and sincerity, and were courteous and respectful of my perspectives.			
Secondary Belief:			
Financial resources were not provided to enable those who needed it to participate			

No.	Factor 6 Agreement Statements (GAS-PPPro)	Z- Score	Column
14	The process does not improve participants' understandings	1.759	+4
30	Relevant information from certain groups was ignored	1.759	+4
9	Financial resources were not provided to enable those who	1.319	+3
17	Learning as a group of stakeholders is only possible when	1.319	+3
29	The EIA public participation process was not run competently	1.319	+3
No.	Factor 6 Disagreement Statements (GAS-PPPro)	Z- Score	Column
16	I found it easy to build trust among the different participa	1.759	-4
7	The discussion format allowed for inclusive participation	1.759	-4
15	The stakeholder's interactions promoted a sense of accountab	1.319	-3
28	The EIA public participation process was fair	1.319	-3
18	The discussions used language which I did not fully	-1.319	-3
No.	Factor 6 - Statistically significant DISTINGUISHING statements (GAS-PPPro)	Z- Score	Column
	There Were NO Distinguishing Statements for Factor 6		
Core Belief			
The process does not improve participants' understandings (learning) of others' beliefs, values, and perspectives as discussion format did not allow for inclusive participation and relevant information from certain groups was ignored.			
Secondary Belief			
The EIA public participation process was not run competently nor considered fair. I found it difficult to build trust among the different participants during the process and stakeholder's interactions did not promote a sense of accountability and sincerity.			

7.3.3 Q Method: Case Study 3 WIND Public Participation Process

WIND Public Participation Process Q Sort: 4 Social Perspectives (Factors)		
No.	Statistically significant CONSENSUS statements for ALL factors	Column
6	I did not have equal access to information	[F1, 0]; [F2, 2], [F3, -1]; [F4, 1]
10	Negotiations (trade-offs) with other stakeholders	[F1, 4]; [F2, 3], [F3, 4]; [F4, 3]
13	Expert knowledge was not valued more highly than	[F1, -2]; [F2, -2], [F3, -2]; [F4, -3]

No.	Factor 1 Agreement Statements (WIND PPPro)	Z- Score	Column
10	Negotiations (trade-offs) with other stakeholders were not	1.830	+4
11	My values and opinions were not discussed	1.587	+4
30	Relevant information from certain groups was ignored	1.543	+3
9	Financial resources were not provided to enable those who	1.301	+3
5	Some affected parties could not participate for reasons	1.204	+3
No.	Factor 1 Disagreement Statements (WIND PPPro)	Z- Score	Column
3	I had an equal chance to voice my concerns	-1.431	-4
8	The process did not exclude those less able to articulate	-1.307	-4
19	It was easy for me to gain influence in technical discussion	-1.196	-3
7	The discussion format allowed for inclusive participation	-1.148	-3
24	Stakeholders that were 'politically connected' controlled	-1.138	-3
No.	Factor 1 - Statistically significant DISTINGUISHING statements	Z- Score	Column
24	Stakeholders that were 'politically connected' controlled	-1.138	-3
3	I had an equal chance to voice my concerns	1.364	-4
Core Belief			
It was not easy for me to gain influence in technical discussion or negotiate (trade-offs) with other stakeholders as my values and opinions were not discussed, I did not have an equal chance to voice my concerns and relevant information from certain groups was ignored.			
Secondary Belief			
Financial resources were not provided to enable those who needed it to participate effectively which led to the exclusion of the involvement from some less articulate affected parties.			

No.	Factor 2 Agreement Statements (WIND PPPro)	Z- Score	Column
14	The process does not improve participants' understandings	1.819	+4
30	Relevant information from certain groups was ignored	1.819	+4

3	I had an equal chance to voice my concerns	1.364	+3
10	Negotiations (trade-offs) with other stakeholders were not	1.364	+3
5	Some affected parties could not participate for reasons that	1.132	+3
No.	Factor 2 Disagreement Statements (WIND PPPro)	Z- Score	Column
16	I found it easy to build trust among the different	-1.819	-4
15	The stakeholder's interactions promoted a sense of accountab	-1.679	-4
21	Discussions integrated social, ecological and economic persp	-1.364	-3
23	Stakeholders from wealthier positions controlled the discuss	-1.364	-3
28	The EIA public participation process was fair	-1.224	-3
No.	Factor 2 - Statistically significant DISTINGUISHING statements	Z- Score	Column
19	It was easy for me to gain influence in technical discussion	0.51	2
Core Belief			
The process does not improve participants' understandings of others' beliefs, values, and perspectives. Relevant information from certain groups was ignored and stakeholder's interactions did not promote a sense of trust, accountability and sincerity.			
Secondary Belief			
Although I had an equal chance to voice my concerns Negotiations (trade-offs) with other stakeholders were not possible for me due to the nature of the process.			

No.	Factor 3 Agreement Statements (WIND PPPro)	Z- Score	Column
10	Negotiations (trade-offs) with other stakeholders were not	1.759	+4
29	The EIA public participation process was not run competently	1.759	+4
11	My values and opinions were not discussed	1.319	+3
14	The process does not improve participants' understandings	1.319	+3
30	Relevant information from certain groups was ignored	1.319	+3
No.	Factor 3 Disagreement Statements (WIND PPPro)	Z- Score	Column
7	The discussion format allowed for inclusive participation	-1.759	-4
27	I was challenged to change a few things in my lifestyle	-1.759	-4
8	The process did not exclude those less able to articulate	-1.319	-3
2	Other stakeholders built my confidence and self-esteem	-1.319	-3
19	It was easy for me to gain influence in technical discussion	-1.319	-3
No.	Factor 3 - Statistically significant DISTINGUISHING statements	Z- Score	Column
29	The EIA public participation process was not run competently	1.759	+4
Core Belief			
It was not easy for me to neither gain influence in technical discussions nor discuss trade-offs with other stakeholders as my values and opinions were not discussed.			
Secondary Belief			
The EIA public participation process was not run competently excluded those less able to articulate their opinion and relevant information from certain groups was ignored. The process does not improve participants' understandings.			

No.	Factor 4 Agreement Statements (WIND PPPro)	Z- Score	Column
21	Discussions integrated social, ecological and economic pe	1.759	+4
22	Stakeholders with higher education controlled the discus	1.759	+4
10	Negotiations (trade-offs) with other stakeholders were not	1.319	+3
11	My values and opinions were not discussed	1.319	+3
25	Public participation added quality to the sustainability	1.319	+3
No.	Factor 4 Disagreement Statements (WIND PPPro)	Z- Score	Column
26	I did not learn new things about environmental problems	-1.759	-4
29	The EIA public participation process was not run competently	-1.759	-4
1	I did not feel comfortable and safe as a participant	-1.319	-3
14	The process does not improve participants' understandings	-1.319	-3
13	Expert knowledge was not valued more highly than local	-1.319	-3
No.	Factor 4 - Statistically significant DISTINGUISHING statements	Z- Score	Column
30	Relevant information from certain groups was ignored	-0.88	-2
14	The process does not improve participants' understandings	-1.319	-3
29	The EIA public participation process was not run competently	-1.759	-4
Core Belief			
Discussions integrated social, ecological and economic perspectives, were controlled by experts and stakeholders with higher education and added quality to the sustainability of decisions being made.			
Secondary Belief			
The EIA public participation process was run competently and improves participants' understandings of others' beliefs, values, and perspectives. I learnt new things about environmental problems society is facing and felt comfortable and safe as a participant but negotiations (trade-offs) with other stakeholders were not possible for me and my values and opinions were not discussed.			

7.3.4 Q Method: Case Study 4 MINE Public Participation Process

MINE Public Participation Process Q Sort: 5 Social Perspectives (Factors)		
No.	Statistically significant CONSENSUS statements for ALL factors	Column
16	I found it easy to build trust among the different participants during the process	[F1, -1]; [F2, -2]; [F3, -1]; [F4, -2]; [F5, -2]
17	Learning as a group of stakeholders is only possible when power is	[F1, 0]; [F2, 0]; [F3, 0]; [F4, -1]; [F5, -1]
24	Stakeholders that were 'politically connected' controlled the discussions more	[F1, 2]; [F2, 3]; [F3, 4]; [F4, 2]; [F5, 2]
29	The MINE public participation process was not run competently	[F1, 2]; [F2, 4]; [F3, 3]; [F4, 4]; [F5, 4]

No.	Factor 1 Agreement Statements (MINE PPPro)	Z- Score	Column
30	Relevant information from certain groups was ignored	1.809	+4
6	I did not have equal access to information	1.595	+4
20	It was hard to gain influence in discussions but I	1.267	+3
10	Negotiations (trade-offs) with other stakeholders were not	1.159	+3
9	Financial resources were not provided to enable those	1.142	+3
No.	Factor 1 Disagreement Statements (MINE PPPro)	Z- Score	Column
25	Public participation added quality to the sustainability	-1.809	-4
7	The discussion format allowed for inclusive participation	-1.522	-4
2	Other stakeholders built my confidence and self-esteem	-1.397	-3
13	Expert knowledge was not valued more highly than local	-1.340	-3
28	The MINE public participation process was fair	-1.119	-3
No.	Factor 1 - Statistically significant DISTINGUISHING statements	Z- Score	Column
	NO Distinguishing Statements for Factor 1		

Core Belief

I did not have equal access to information, it was hard to negotiate trade offs or gain influence in discussions but I still contested to gain more impact.

Secondary Belief

The process did not allow for inclusive participation, relevant information from certain groups was ignored and expert knowledge was valued more highly than local knowledge resulting in the participation process not adding value to the decision making concerning sustainable outcomes.
The MINE process was not fair and inadequate financial support was provided for those who needed it.

No.	Factor 2 Agreement Statements (MINE PPPro)	Z- Score	Column
27	I was challenged to change a few things in my lifestyle	1.759	+4
29	The MINE public participation process was not run	1.759	+4
23	Stakeholders from wealthier positions controlled the dis	1.319	+3
24	Stakeholders that were 'politically connected' controlled	1.319	+3
1	I did not feel comfortable and safe as a participant	1.319	+3
No.	Factor 2 Disagreement Statements (MINE PPPro)	Z- Score	Column
28	The MINE public participation process was fair	-1.759	-4
25	Public participation added quality to the sustainability	-1.759	-4
18	The discussions used language which I did not fully	-1.319	-3
20	It was hard to gain influence in discussions but I still	-1.319	-3
26	I did not learn new things about environmental problems	-1.319	-3
No.	Factor 2 - Statistically significant DISTINGUISHING statements	Z- Score	Column
27	I was challenged to ch ...	1.76	+4

Core Belief

The MINE public participation process was not run competently or fairly and did not add quality to the sustainability of decisions being made.

Secondary Belief

Stakeholders from wealthier positions and those that were 'politically connected' controlled the discussions more than others.
I was challenged to change a few things in my lifestyle as I learnt new things about environmental problems society faces.

No.	Factor 3 Agreement Statements (MINE PPPro)	Z- Score	Column
24	Stakeholders that were 'politically connected' controlled	1.759	+4
30	Relevant information from certain groups was ignored	1.759	+4
5	Some affected parties could not participate for reasons	1.319	+3
14	The process does not improve participants' understandings	1.319	+3
29	The MINE public participation process was not run compe	1.319	+3
No.	Factor 3 Disagreement Statements (MINE PPPro)	Z- Score	Column
7	The discussion format allowed for inclusive participation	-1.759	-4
8	The process did not exclude those less able to articulate	-1.759	-4
4	All important stakeholders took part in the process	-1.319	-3
15	The stakeholder's interactions promoted a sense of	-1.319	-3
12	Participants were courteous and respectful of my perspective	-1.319	-3
No.	Factor 3 - Statistically significant DISTINGUISHING statements	Z- Score	Column
4	All important stakeholders took part in the process	-1.32	-3

Core Belief

Some important stakeholders did not take part in the process and some affected parties could not participate for reasons that could have been overcome.

Secondary Belief

The discussion format did not provide for inclusive participation. Stakeholders that were 'politically connected' controlled the discussions and relevant information from certain groups was ignored including perspectives from those less able to articulate their oppinion.
The process does not improve participants' understandings of others' beliefs, values, and perspectives and stakeholders' interactions did not promote a sense of accountability and sincerity.
The MINE public participation process was not run competently.

No.	Factor 4 Agreement Statements (MINE PPPro)	Z- Score	Column
26	I did not learn new things about environmental problems	1.759	+4
29	The MINE public participation process was not run	1.759	+4
6	I did not have equal access to information	1.319	+3
10	Negotiations (trade-offs) with other stakeholders were	1.319	+3
30	Relevant information from certain groups was ignored	1.319	+3
No.	Factor 4 Disagreement Statements (MINE PPPro)	Z- Score	Column
28	The MINE public participation process was fair	-1.759	-4
1	I did not feel comfortable and safe as a participant	-1.759	-4
15	The stakeholder's interactions promoted a sense of accounta	-1.319	-3
25	Public participation added quality to the sustainability	-1.319	-3
12	Participants were courteous and respectful of my perspecti	-1.319	-3
No.	Factor 4 - Statistically significant DISTINGUISHING statements	Z- Score	Column
26	I did not learn new things about environmental problems	1.76	+4

Core Belief

The MINE public participation process was not run fairly or competently and did not add quality to the sustainability of decisions.
Secondary Belief
I did not learn new things about environmental problems society is facing and did not have equal access to information. Negotiations (trade-offs) with other stakeholders were not posisble for me and they were not courteous and respectful of my perspective.

No.	Factor 5 Agreement Statements (MINE PPPro)	Z- Score	Column
29	The MINE public participation process was not run compe	1.759	+4
30	Relevant information from certain groups was ignored	1.759	+4
9	Financial resources were not provided to enable those who	1.319	+3
10	Negotiations (trade-offs) with other stakeholders were not	1.319	+3
11	My values and opinions were not discussed	1.319	+3
No.	Factor 5 Disagreement Statements (MINE PPPro)	Z- Score	Column
25	Public participation added quality to the sustainability	-1.759	-4
8	The process did not exclude those less able to articulate	-1.759	-4
13	Expert knowledge was not valued more highly than local	-1.319	-3
28	The MINE public participation process was fair	-1.319	-3
21	Discussions integrated social, ecological and economic persp	-1.319	-3
No.	Factor 5 - Statistically significant DISTINGUISHING statements	Z- Score	Column
21	Discussions integrated social, ecological and economic persp	-1.319	-3
Core Belief			
The MINE public participation process was neither run competently nor fairly. Discussions valued expert knowledge above local knowledge, did not integrate social, ecological and economic perspectives and the public participation did not add quality to the sustainability of decisions being made.			
Secondary Belief			
The process excluded those less able to articulate their oppinion, relevant information from certain groups was ignored and Financial resources were not provided to enable those who needed it to participate effectively. Negotiations (trade-offs) with other stakeholders were not possible for me and my values and opinions were not discussed.			

7.3.5 Q Method: Case Study 5 REDZ Public Participation Process

REDZ Wind and Solar Public Participation Process Q Sort: 5 Social Perspectives (Factors)		
No.	Statistically significant CONSENSUS statements for ALL factors	Column
4	All important stakeholders took part in the process	[F1, -2]; [F2, -1]; [F3, -3]; [F4, -1]; [F5, -3]
9	Financial resources were not provided to enable those who needed it	[F1, 4]; [F2, 3]; [F3, 4]; [F4, 3]; [F5, 3]
13	Expert knowledge was not valued more highly than local knowledge	[F1, -3]; [F2, -3]; [F3, -4]; [F4, -4]; [F5, -4]
17	Learning as a group of stakeholders is only possible when power is willingly	[F1, 2]; [F2, 0]; [F3, 0]; [F4, 1]; [F5, 0]
18	The discussions used language that I did not fully understand.	[F1, -1]; [F2, 1]; [F3, -1]; [F4, -1]; [F5, -1]
21	Discussions integrated social, ecological and economic perspectives.	[F1, 2]; [F2, 2]; [F3, 2]; [F4, 4]; [F5, 2]

No.	Factor 1 Agreement Statements (REDZ PPPro)	Z- Score	Column
9	Financial resources were not provided to enable	1.788	+4
10	Negotiations (trade-offs) with other stakeholders were not	1.731	+4
29	The SEA public participation process was not	1.395	+3
5	Some affected parties could not participate for reasons	1.268	+3
11	My values and opinions were not discussed	1.154	+3
No.	Factor 1 Disagreement Statements (REDZ PPPro)	Z- Score	Column
7	The discussion format allowed for inclusive participation	-1.788	-4
8	The process did not exclude those less able to articulate	-1.617	-4
13	Expert knowledge was not valued more highly than local	-1.395	-3
15	The stakeholder's interactions promoted a sense	-1.395	-3
25	Public participation added quality to the sustainability	-1.147	-3
No.	Factor 1 - Statistically significant DISTINGUISHING statements	Z- Score	Column
	NO Distinguishing Statements for Factor 1		
Core Belief			
Financial resources were not provided to enable wider participation that excluded some affected parties including those less able to articulate their opinion.			
Secondary Belief			
Negotiations (trade-offs) with other stakeholders were not possible for me, my values and opinions were not discussed and stakeholder's interactions did not promote a sense of accountability or sincerity. The discussion format did not allow for inclusive participation with expert knowledge valued more highly than local knowledge limiting the contribution of stakeholders to the decision making.			

No.	Factor 2 Agreement Statements (REDZ PPPro)	Z- Score	Column
25	Public participation added quality to the sustainability	1.759	+4
30	Relevant information from certain groups was ignored	1.759	+4
9	Financial resources were not provided to enable those	1.319	+3
22	Stakeholders with higher education controlled the	1.319	+3
27	I was challenged to change a few things in my lifestyle	1.319	+3
No.	Factor 2 Disagreement Statements (REDZ PPPro)	Z- Score	Column
24	Stakeholders that were 'politically connected' controlled	-1.759	-4
26	I did not learn new things about environmental	-1.759	-4

14	The process does not improve participants' understandings	-1.319	-3
19	It was easy for me to gain influence in technical	-1.319	-3
13	Expert knowledge was not valued more highly than local	-1.319	-3
No.	Factor 2 - Statistically significant DISTINGUISHING statements	Z- Score	Column
24	Stakeholders that were 'politically connected' controlled	-1.76	-4
Core Belief			
Stakeholders with higher education controlled the process and those that were 'politically connected' did not. Relevant information from certain groups was ignored and financial resources were not provided to enable those who needed it to participate effectively.			
Secondary Belief			
The process does improve participants' understandings of others' beliefs, values, and perspectives, I was challenged to change a few things in my lifestyle and learnt new things about environmental challenges society faces.			

No.	Factor 3 Agreement Statements (REDZ PPPro)	Z- Score	Column
9	Financial resources were not provided to enable	1.759	+4
12	Participants were courteous and respectful	1.759	+4
20	It was hard to gain influence in discussions	1.319	+3
22	Stakeholders with higher education controlled	1.319	+3
24	Stakeholders that were 'politically connected' controlled	1.319	+3
No.	Factor 3 Disagreement Statements (REDZ PPPro)	Z- Score	Column
13	Expert knowledge was not valued more highly than local knowl	-1.759	-4
11	My values and opinions were not discussed	-1.759	-4
4	All important stakeholders took part in the	-1.319	-3
8	The process did not exclude those less able to	-1.319	-3
28	The SEA public participation process was fair	-1.319	-3
No.	Factor 3 - Statistically significant DISTINGUISHING statements	Z- Score	Column
24	Stakeholders that were 'politically connected' controlled	1.32	3
Core Belief			
Stakeholders with higher education and stakeholders that were 'politically connected' controlled the discussions more than others and expert knowledge was valued more than local knowledge.			
Secondary Belief			
The process did not fairly provide financial resources to enable those who needed it to participate effectively and excluded those less able to articulate their opinion. Participants were courteous and respectful of my perspectives however, it was hard to gain influence in discussions and my values and opinions were not discussed.			

No.	Factor 4 Agreement Statements (REDZ PPPro)	Z- Score	Column
21	Discussions integrated social, ecological and	1.759	+4
29	The SEA public participation process was not	1.759	+4
9	Financial resources were not provided to enable	1.319	+3
23	Stakeholders from wealthier positions controlled	1.319	+3
30	Relevant information from certain groups was ignored	1.319	+3

No.	Factor 4 Disagreement Statements (REDZ PPPro)	Z- Score	Column
16	I found it easy to build trust among the different	-1.759	-4
13	Expert knowledge was not valued more highly than	-1.759	-4
11	My values and opinions were not discussed	-1.319	-3
25	Public participation added quality to the sustainability	-1.319	-3
7	The discussion format allowed for inclusive	-1.319	-3
No.	Factor 4 - Statistically significant DISTINGUISHING statements	Z- Score	Column
	NO Distinguishing Statements for Factor 4		
Core Belief			
The SEA public participation process was not run competently. Financial resources were not provided to enable inclusive participation and those who needed it to participate effectively, stakeholders from wealthier positions controlled the discussions more than others, expert knowledge was valued more highly than local knowledge, and relevant information from certain groups was ignored.			
Secondary Belief			
Although discussions integrated social, ecological and economic perspectives the public participation process did not add quality to the sustainability of decisions being made. I did not find it easy to build trust among the different participants during the process although my values and opinions were discussed.			

No.	Factor 5 Agreement Statements (REDZ PPPro)	Z- Score	Column
10	Negotiations (trade-offs) with other stakeholders	1.390	+4
12	Participants were courteous and respectful of my	1.373	+4
30	Relevant information from certain groups	1.373	+3
14	The process does not improve participants' understandings	1.355	+3
9	Financial resources were not provided to enable	1.170	+3
No.	Factor 5 Disagreement Statements (REDZ PPPro)	Z- Score	Column
13	Expert knowledge was not valued more highly	-1.830	-4
19	It was easy for me to gain influence in technical	-1.593	-4
7	The discussion format allowed for inclusive	-1.390	-3
29	The SEA public participation process was not run	-1.373	-3
4	All important stakeholders took part in the	-1.373	-3
No.	Factor 5 - Statistically significant DISTINGUISHING statements	Z- Score	Column
14	The process does not imp ...	1.36	3
Core Belief			
The process does not improve participants' understandings of others' beliefs, values, and perspectives as discussions did not allow for inclusive participation and relevant information from certain groups was ignored.			
Secondary Belief			
Although participants were courteous and respectful of my perspectives negotiations (trade-offs) with other stakeholders were not possible for me and it was not easy for me to gain influence in technical discussions The SEA public participation process was run competently and based most decisions on expert input yet some important stakeholders did not take part in the process.			

7.4 Method 3: Adapted Q Methodology

7.4.1 Case Study 1: PARK Priority Functional Capabilities

	'fC'	Consensus statements for all factors	*Column (1-10)*
	fC1	Job	*[F1, 9]; [F2, 7]; [F3, 9]*
	fC2	**Capacity to think, reason and make choices**	***[F1, 8]; [F2, 7]; [F3, 7]***
	fC5	To participate in political activities that affect your life	*[F1, 7]; [F2, 10]; [F3, 9]*
	fC6	Access to clean water and sanitation	*[F1, 9]; [F2, 7]; [F3, 8]*
	fC21	An education	*[F1, 10]; [F2, 9]; [F3, 7]*
	fC25	Internet and Email connectivity	*[F1, 8]; [F2, 8]; [F3, 6]*
	fC28	Living in a clean and natural environment	*[F1, 7]; [F2, 9]; [F3, 10]*
	fC29	Freedom for self-determination	*[F1, 6]; [F2, 8]; [F3, 8]*

Individual Q sort example: PARK-002

10	*9*	*8*	*7*	*6*	*5*	*4*	*3*	*2*	*1*
Highest Priority			Valuable			Less Valuable		Least Valuable	
fC5	fC28	fC1	fC25	fC8	fC11	fC9	fC23	fC16	fC17
	fC21	fC6	fC10	**fC2**	fC26	fC3	fC20	fC7	
		fC30	fC12	fC15	fC18	fC4	fC19		
			fC24	fC27	fC14	fC13			
				fC29	fC22				

Priority Column	**'fC'**	Factor 1 Priority Capabilities	**'fC'**	Factor 2 Priority Capabilities	**'fC'**	Factor 3 Priority Capabilities
10	fC21	An education	fC5	To participate in political activities that affect your life	fC28	Living in a clean and natural environment
9	fC6	Access to clean water and sanitation	fC28	Living in a clean and natural environment	fC5	To participate in political activities that affect your life
9	fC1	Job	fC21	An education	fC1	Job
8	**fC2**	**Capacity to think, reason and make choices**	fC25	Internet and Email connectivity	fC6	Access to clean water and sanitation
8	fC12	Personal safety and physical security	fC29	Freedom for self-determination	fC29	Equal opportunities for personal advancement
8	fC25	Internet and Email connectivity	fC12	Personal safety and physical security	fC29	Freedom for self-determination
7	fC8	Income and wealth	**fC2**	**Capacity to think, reason and make choices**	fC7	Family and friends
7	fC5	To participate in political activities that affect your life	fC1	Job	fC10	Determination, motivation, self-reliance
7	fC15	Transportation	fC24	Property rights (the right to own personal property)	fC21	An education
7	fC28	Living in a clean and natural environment	fC6	Access to clean water and sanitation	**fC2**	**Capacity to think, reason and make choices**

7.4.2 Case Study 2: GAS Scoping Study Priority Functional Capabilities

	‘fC’	Consensus statements for all factors	*Column (1-10)*
	fC2	**Capacity to think, reason and make choices**	***[F1, 8]; [F2, 8]; [F3, 9]***
	fC21	An education	*[F1, 9]; [F2, 8]; [F3, 10]*

Individual Q sort example: GAS-0058

10	*9*	*8*	*7*	*6*	*5*	*4*	*3*	*2*	*1*
Highest Priority			Valuable		Less Valuable			Least Valuable	
fC1	fC13	fC4	fC15	fC24	fC7	fC16	fC3	fC14	fC19
	fC21	fC6	fC11	fC29	fC8	fC27	fC17	fC9	
		fC28	**fC2**	fC29	fC25	fC10	fC18		
			fC12	fC5	fC22	fC26			
				fC20	fC23				

Priority Column	**‘fC’**	Factor 1 Priority Capabilities	**‘fC’**	Factor 2 Priority Capabilities	**‘fC’**	Factor 3 Priority Capabilities
10	fC1	Job	fC5	To participate in political activities that affect your life	fC21	An education
9	fC13	Basic clothing	fC28	Living in a clean and natural environment	**fC2**	**Capacity to think, reason and make choices**
9	fC21	An education	fC29	Freedom for self-determination	fC5	To participate in political activities that affect ur life
8	fC4	Electricity	fC21	An education	fC8	Income and wealth
8	fC6	Access to clean water & sanitation	fC25	Internet and email connectivity	fC12	Personal safety & physical security
8	fC28	Living in a clean and natural environment	**fC2**	**Capacity to think, reason and make choices**	fC25	Internet and email connectivity
7	fC11	Housing & shelter	fC8	Income and wealth	fC9	Free time/recreation
7	fC12	Personal safety & physical security	fC10	Determination, motivation, self-reliance	fC10	Determination, motivation, self-reliance
7	**fC2**	**Capacity to think, reason and make choices**	fC12	Personal safety & physical security	fC1	Job
7	fC15	Transportation	fC23	Self-respect	fC29	Freedom for self-determination

7.4.3 Case Study 3: WIND S&EIA Priority Functional Capabilities

	'fC'	Consensus statements for all factors	*Column (1-10)*
	fC1	Job	*[F1, 10]; [F2, 8]; [F3, 6]*
	fC6	Access to clean water and sanitation	*[F1, 6]; [F2, 6]; [F3, 7]*
	fC9	Free time/recreation	*[F1, 7]; [F2, 5]; [F3, 5]*
	fC12	Personal safety and physical security	*[F1, 6]; [F2, 6]; [F3, 5]*
	fC29	Equal opportunities for personal advancement	*[F1, 5]; [F2, 6]; [F3, 5]*

Individual Q sort example: WIND-016

10	*9*	*8*	*7*	*6*	*5*	*4*	*3*	*2*	*1*
Highest Priority			Valuable		Less Valuable			Least Valuable	
fC27	fC1	fC21	**fC2**	fC9	fC10	fC5	fC3	fC16	fC19
	fC8	fC26	fC28	fC12	fC7	fC30	fC17	fC20	
		fC11	fC6	fC14	fC29	fC25	fC18		
			fC4	fC23	fC13	fC15			
				fC22	fC24				

Priority Column	**'fC'**	Factor 1 Priority Capabilities	**'fC'**	Factor 2 Priority Capabilities	**'fC'**	Factor 3 Priority Capabilities
10	fC5	To participate in political activities that affect your life	fC27	Good health	fC5	To participate in political activities that affect your life
9	fC28	Living in a clean and natural environment	fC21	An education	fC7	Family and friends
9	fC21	An education	fC26	Sleep and rest	fC23	Self-respect
8	**fC2**	**Capacity to think, reason and make choices**	fC8	Income and wealth	fC10	Determination, motivation, self-reliance
8	fC29	Freedom for self-determination	fC1	Job	fC13	Basic clothing
8	fC25	Internet and Email connectivity	fC11	Housing and shelter	fC22	Happiness
7	fC1	Job	**fC2**	**Capacity to think, reason and make choices**	fC4	Electricity
7	fC24	Property rights (the right to own personal property)	fC28	Living in a clean and natural environment	fC11	Housing and shelter
7	fC10	Determination, motivation, self-reliance	fC4	Electricity	fC6	Access to clean water and sanitation
7	fC9	Free time/recreation	fC29	Equal opportunities for personal advancement	fC24	Property rights (the right to own personal property)

7.4.4 Case Study 4: MINE Priority Functional Capabilities

	'fC'	Consensus statements for all factors	*Column (1-10)*
	fC2	**Capacity to think, reason and make choices**	***[F1, 9]; [F2, 7]; [F3, 9]***
	fC4	Electricity	*[F1, 6]; [F2, 4]; [F3, 4]*
	fC5	To participate in political activities that affect your life	*[F1, 8]; [F2, 10]; [F3, 10]*
	fC10	Determination, motivation, self-reliance	*[F1, 7]; [F2, 7]; [F3, 8]*
	fC12	Personal safety and physical security	*[F1, 6]; [F2, 5]; [F3, 5]*
	fC13	Basic clothing	*[F1, 6]; [F2, 6]; [F3, 5]*
	fC21	An education	*[F1, 8]; [F2, 9]; [F3, 8]*
	fC22	Happiness	*[F1, 5]; [F2, 6]; [F3, 6]*
	fC27	Good health	*[F1, 4]; [F2, 6]; [F3, 6]*
	fC28	Living in a clean and natural environment	*[F1, 9]; [F2, 8]; [F3, 8]*
	fC29	Freedom for self-determination	*[F1, 7]; [F2, 8]; [F3, 7]*

Individual Q sort example: MINE-022

10	*9*	*8*	*7*	*6*	*5*	*4*	*3*	*2*	*1*
Highest Priority			Valuable		Less Valuable			Least Valuable	
fC5	fC11	**fC2**	fC1	fC24	fC6	fC22	fC14	fC9	fC26
	fC21	fC28	fC19	fC13	fC4	fC3	fC25	fC18	
		fC29	fC10	fC15	fC7	fC20	fC17		
			fC8	fC23	fC12	fC30			
				fC27	fC16				

Priority Column	**'fC'**	Factor 1 Priority Capabilities	**'fC'**	Factor 2 Priority Capabilities	**'fC'**	Factor 3 Priority Capabilities
10	**fC2**	**Capacity to think, reason and make choices**	fC5	To participate in political activities that affect your life	fC5	To participate in political activities that affect your life
9	fC1	Job	fC21	An education	**fC2**	**Capacity to think, reason and make choices**
9	fC28	Living in a clean and natural environment	fC11	Housing and shelter	fC1	Job
8	fC5	To participate in political activities that affect your life	**fC2**	**Capacity to think, reason and make choices**	fC10	Determination, motivation, self-reliance
8	fC25	Internet and Email connectivity	fC29	Freedom for self-determination	fC21	An education
8	fC21	An education	fC28	Living in a clean and natural environment	fC28	Living in a clean and natural environment
7	fC6	Access to clean water and sanitation	fC8	Income and wealth	fC20	Sexual satisfaction
7	fC24	Property rights (the right to own personal property)	fC1	Job	fC25	Internet and Email connectivity
7	fC29	Freedom for self-determination	fC10	Determination, motivation, self-reliance	fC29	Equal opportunities for personal advancement
7	fC10	Determination, motivation, self-reliance	fC23	Self-respect	fC29	Freedom for self-determination

7.4.6 Case Study 5: REDZs Priority Functional Capabilities

	'fC'	Consensus statements for all factors	*Column (1-10)*
	fC1	Job	*[F1, 6]; [F2, 7]; [F3, 6]*
	fC2	**Capacity to think, reason and make choices**	***[F1, 8]; [F2, 9]; [F3, 8]***
	fC5	To participate in political activities that affect your life	*[F1, 9]; [F2, 8]; [F3, 9]*
	fC6	Access to clean water and sanitation	*[F1, 8]; [F2, 6]; [F3, 7]*
	fC8	Income and wealth	*[F1, 7]; [F2, 7]; [F3, 6]*
	fC11	Housing and shelter	*[F1, 7]; [F2, 6]; [F3, 8]*
	fC13	Basic clothing	*[F1, 6]; [F2, 5]; [F3, 7]*
	fC20	Sexual satisfaction	*[F1, 5]; [F2, 5]; [F3, 5]*
	fC21	An education	*[F1, 3]; [F2, 5]; [F3, 4]*
	fC23	Self-respect	*[F1, 6]; [F2, 5]; [F3, 5]*
	fC24	Property rights (the right to own personal property)	*[F1, 7]; [F2, 6]; [F3, 6]*
	fC27	Good health	*[F1, 7]; [F2, 6]; [F3, 7]*
	fC29	Equal opportunities for personal advancement	*[F1, 6]; [F2, 6]; [F3, 6]*

Individual Q sort example: REDZ1-008

10	*9*	*8*	*7*	*6*	*5*	*4*	*3*	*2*	*1*
Highest Priority		Valuable			Less Valuable			Least Valuable	
fC5	fC23	fC11	fC24	fC27	fC29	fC7	fC19	fC26	fC17
	fC2	fC1	fC28	fC6	fC22	fC10	fC16	fC18	
		fC21	fC8	fC29	fC20	fC15	fC9		
			fC13	fC4	fC12	fC14			
				fC3	fC25				

Priority Column	**'fC'**	Factor 1 Priority Capabilities	**'fC'**	Factor 2 Priority Capabilities	**'fC'**	Factor 3 Priority Capabilities
10	fC7	Family and friends	fC21	An education	fC22	Happiness
9	fC5	To participate in political activities that affect your life	**fC2**	**Capacity to think, reason and make choices**	fC5	To participate in political activities that affect your life
9	fC14	Having children	fC12	Personal safety and physical security	fC21	An education
8	**fC2**	**Capacity to think, reason and make choices**	fC5	To participate in political activities that affect your life	**fC2**	**Capacity to think, reason and make choices**
8	fC21	An education	fC10	Determination, motivation, self-reliance	fC11	Housing and shelter
8	fC6	Access to clean water and sanitation	fC28	Living in a clean and natural environment	fC25	Internet and Email connectivity
7	fC11	Housing and shelter	fC8	Income and wealth	fC13	Basic clothing
7	fC24	Property rights (the right to own personal property)	fC14	Having children	fC6	Access to clean water and sanitation
7	fC8	Income and wealth	fC1	Job	fC27	Good health
7	fC27	Good health	fC25	Internet and Email connectivity	fC29	Equal opportunities for personal advancement

7.4.7 Functional Capabilities placed in column of similarity and difference

Comparisons	1-5 rank places different **'Similar value'**	6-10 rank places different **'Relatively differently ranked yet similar value'**	11-20 rank places different **'Differently ranked'**	More than 20 places different **'Very Differently ranked & valued'**
Q Method all EIAs fCs aggregate rank compared with Clark's normative list	Jobs (congruent) Access to clean water and sanitation Personal safety and physical security An education Basic clothing Income and wealth Self-determination Transportation Self-respect	Living in a clean and natural environment Happiness Good health Free time/recreation	Capacity to think, reason and make choices Family and friends Housing and shelter Sleep and rest Property rights (the right to own personal property) Sexual satisfaction	Electricity To participate in political activities that affec your life Free time/recreation Determination, motivation, self-reliance Equal opportunities for personal advanceme
Report emphasis fCs aggregate rank compared with Clark's normative list	Jobs Personal safety and physical security An education Good health Fuel for cooking and heating Transportation Freedom for self-determination Watching sport (congruent)	Capacity to think, reason and make choices Access to clean water and sanitation Housing and shelter Family and friends Land and cattle (All weather) roads Playing sport Exercise Having children Living long Equal opportunities for personal advancement	Income and wealth Sleep and rest Happiness Access to family planning	Living in a clean and natural environment Electricity Participate in political activities that affect your life Free time/recreation Property rights (the right to own personal property) Determination, motivation, self-reliance
All EIA report emphasis fCs aggregate rank compared with Q method all EIAs fCs aggregate rank	Jobs Capacity to think, reason and make choices Electricity To participate in political activities that affect your life Free time/recreation Personal safety and physical security Determination, motivation, self-reliance Good health Family and friends Freedom for self-determination Transportation Free time/recreation Sleep and rest	An education Access to clean water and sanitation Happiness Housing and shelter	Equal opportunities for personal advancement Living in a clean and natural environment Income and wealth Property rights (the right to own personal property)	----

There are many similarities in ranking. For the purpose of this discussion, tentative classification terms have been gauged from Appendix 7.4.7 to indicate the degree of difference in placement and implied prioritization of an fC. If a functional capability is ranked within 0-5 places of its placement in another source, it is considered a 'similarly valued functional capability'. When it is 6-10 places different, it is considered a 'relatively differently ranked yet similarly valued functional capability'. When 11-20 places different, it is considered a 'differently ranked and differently valued functional capability'. When placed more than 20 places different it is considered a 'significantly differently valued capability'. These labels are tentative and not intended to attribute fixed ranking properties to the functional capabilities. The incommensurability of the ranking in the metrics used in the different the methods does not allow for an exact comparative analysis. They are simply used here to aid in the discussion of their apparent valuation across the sources that indicate the potential validation of generalizable capabilities. The ranked lists from the Q method and the Report Analysis are both preliminary, and similar to Nussbaum's list, a starting point for further investigation, public dialogue and empirical testing

7.5 Method 4: Likert Survey

Initial Contact Email

Subject: UCT PhD Research request – Stakeholder in environmental assessment public participation

Text:

Dear _____,

I have been given your contact information from _____ at _____, as you are a registered stakeholder in the public participation process for the environmental assessment in the proposed _____.

I am conducting my PhD research in environmental assessment public participation and I was hoping you might be able to help me by filling out a survey. For your convenience, I have developed an online survey, which you can do in your own time. It should take you about 15-20 minutes. If you would rather conduct the survey on paper or face-to-face I could arrange to meet with you in person. If that is not possible we could also arrange an online 'chat' via Skype or GoogleTalk.

The research survey is available in the following languages (Afrikaans; English; Xhosa; Zulu). Please let me know which one you would prefer to use.

The survey questions and will aim to gaining a better understanding of how stakeholders have been able to influence the proposal, other stakeholders and public participation outcomes. It also tries to understand the stakeholder's context and values.

As is a requirement for this research, all your responses are treated by this research with the strictest confidentiality and anonymity in accordance with the University of Cape Town Science Faculty Research Ethical guideline. It is also important for me to let you know that your participation in this research has no influence on the outcome of the environmental assessment process and will be used for research purposes only.

Thank you for your consideration of this research request.

Kind regards,
Nicholas Simpson
PhD candidate UCT (EGS dept)
rsapublicparticipation@gmail.com

Follow up email introducing link to Q sort ware.

Subject: UCT PhD research follow up (public participation)

Text:
Dear _____,

Thank you very much for being open to this research. I would greatly appreciate your perspective. I will be in contact with you shortly.

The survey is an online survey in environmental assessment public participation. You will shortly receive a follow up email that will include a link to the 'Qsortware' survey.

Some mail clients auto-filter the 'Qsortware' invite email to you promotions/social/spam folders. Please could you check for this mail in your other folders if it does not get delivered to your inbox. Please advise if you would like me to resend you the link or if you would like the survey in a different language (Afrikaans; English; Xhosa; Zulu).

Warmest regards,
Nicholas Simpson
PhD candidate UCT (EGS dept)
rsapublicparticipation@gmail.com
0721643037

Qsortware online survey automated Invite

Subject: UCT PhD research link (public participation)

Text:
Dear _____,

Thank you for participating in this research. Please follow the link in this email to the online survey.

Please feel free to contact me if you have any questions. If you would like me to give you a call back regarding any technical issues or if there is something you would like to say that is not asked in the survey please just send your phone number to this email and I will get back to you as soon as possible.

Kind regards,
Nicholas Simpson

PhD candidate UCT (EGS dept)
rsapublicparticipation@gmail.com
0721643037

Welcome

Thank you very much for agreeing to participate in this survey on EIA public participation.

The the Q sort and survey questions and will aim to gaining a better understanding of your stakeholder context, your participatory capabilities and ability to realize states of being that you value in light of sustainable decision-making. Many of the questions will therefore target your satisfaction and happiness with your position in relation to sustainable decision-making within the context of the EIA project proposal.

Please have in mind your participation in this specific EIA public participation only.

Please kindly allow for 15 minutes of your time to complete this online survey and make sure your webpage is 'maximized' (full screen). If you refresh your webpage or your computer switches off your responses may be lost and it may need you to restart the survey.

All responses are treated by this research with the strictest confidentiality and anonymity in accordance with the University of Cape Town Science Faculty Research Ethical Guideline. The responses have no bearing on the input or outcomes of the environmental assessment itself. They simply serve a research objective to gain better understanding of stakeholder participation. The aim of this is to influence public participation policy and regulation for 'better' and more sustainable decision-making.

Kind regards,
Nicholas Simpson
PhD candidate UCT (EGS dept)
rsapublicparticipation@gmail.com
0721643037

Background information

In order to help contextualize your Q sort and give a greater understanding of environmental assessment public participation from your perspective, please could you provide this research with the following responses. The questions will ask you to respond to what extent you agree with that statement. There will also be questions targeting your self-perception of your personal capabilities and happiness.

All the time; Fairly Often; Occasionally; Rarely; Never; Unsure

My idea of a good life is based on my own judgement
I have a clear plan of how I would like my life to be
I respect, value and appreciate other people
I tend to find it difficult to imagine the situation of other people
In general I appreciate and value plants, animals and the world of nature
I am able to participate in environmental decision making that affects my live if I want to
I was an active stakeholder in this process
I was a passive stakeholder in this process
I achieved more through collaborating with others
Decision making is more sustainabily robust through collaboration with others
The public participation process in this environmental assessment is fair
I considered the rights of future generations in my contribution to the decision-making
Most decisions from other stakeholders were made with the sustainability of future generations and their needs in mind
Decision affecting future generations were adequate
How often was this maxim true of the public participation: "do unto future generations what you would have wanted previous generations to do unto you"?

Collaboration & Justice

Please answer the following questions or statements to the degree of their relevance to your experience.

Always; Often; Sometimes; Rarely; Never; Unsure

I found other stakeholders who shared my views?
There were opportunities provided by the participation process where I could meet/collaborate with other stakeholders who held similar views to my own?
I was able to give a reasoned explanation of my perspective
I was able to change the mind of others through discussion
I have changed my attitude to a sustainability issue through engaging in discussion with another stakeholder
I have changed the attitude of another stakeholder to a sustainability issue through engaging in discussion
My participation allowed me to influence what I consider valuable regarding my future
The rights of future generations should be considered in sustainable decision-making?
It is fair to make decisions in an environmental assessment that will affect generations that are not born yet

My participation was not allowed in the formal decision making process or even considered
Process served to bully me into accepting a project that was already going ahead
I was manipulated into thinking that my opinions count towards decision making
Public participation is just a way to rubber-stamp public (my) approval
Although I had the chance to discuss and argue my point, there was no assurance that my views will be listened to
Public participation is a top down initiative with no allowance for feedback or negotiation
Public participation is a top down initiative BUT allows for feedback or negotiation
I shared planning and decision making responsibilities with the developer and other stakeholders

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Q Study environmental assessment public participation

Please sort (drag and drop) the following statements into three categories based on your agreement, neutrality or disagreement with that statement. Have in mind your personal perspective in YOUR CONTEXT of this particular EIA stakeholder experience.

Now please refine your choice of statements by placing (drag and drop) them into the bins. I suggest you start with the statements you agree with most strongly, and then those you disagree with most strongly, and then work towards the middle. The statements that are most important for this research as those placed on the outsides - i.e. the few you agree with, or disagree with the strongest. The instructions at the bottom of the box indicate how many statements are required in that column. It does not matter if you have a statement you agree with ending up in boxes towards the right - as long as you agree with the statements in the boxes immediately left of it more. There is a limit to the number of statements per box and you may need to drag and drop between boxes to reshuffle to get the right number. Once all boxes are full press continue.

Agreement; Neutral Feelings; Disagreement

Strongest Agreement; Strong Agreement; Agreement; No strong feelings/Agreement; No strong feelings; No strong feelings; No strong feelings/Disagreement; Disagreement; Strong Disagreement; Strongest Disagreement

I did not feel comfortable and safe as a participant
Other stakeholders built my confidence and self-esteem
I had an equal chance to voice my concerns
All important stakeholders took part in the process
Some affected parties could not participate for reasons that could have been over come
I did not have equal access to information
The discussion format allowed for inclusive participation
The process did not exclude those less able to articulate their opinion
Financial resources were not provided to enable those who needed it to participate effectively
Negotiations (trade-offs) with other stakeholders were not possible for me
My values and opinions were not discussed
Participants were courteous and respectful of my perspectives
Expert knowledge was not valued more highly than local knowledge
The process does not improve participants' understandings of others' beliefs, values, and perspectives
The stakeholder's interactions promoted a sense of accountability and sincerity
I found it easy to build trust among the different participants during the process
Collaborative learning is only possible when power is willingly shared
The discussions used language which I did not fully understand
It was easy for me to gain influence in technical discussions
It was hard to gain influence in discussions but I still contested to gain more impact
Discussions integrated social, ecological and economic perspectives
Stakeholders with higher education controlled the discussions more than others
Stakeholders from wealthier positions did not control the discussions more than others
Stakeholders that were 'politically connected' controlled the discussions more than others
Public participation added quality to the sustainability of decisions being made
I did not learn new things about environmental problems that society faces
I was challenged to change a few things in my lifestyle to contribute towards sustainability
The EIA public participation process was fair
The EIA public participation process was not run competently
Relevant information from certain groups was ignored

Participant education level

Please indicate your highest education level

My highest education level (pass) is...

No formal education
Grade 7

Grade 10
Matric
Diploma/Apprenticeship/Undergraduate degree
Postgraduate degree

Participant Ethno-linguistic data

Please indicate which language group is your:
‘mother tongue’.
'second language' (if any)
'third language' (if any)
The participation process was mainly conducted in:
Your participation in the EIA process was mainly in:

Afrikaans; English; Xhosa; Zulu; Other language; Not applicable

---

Participant Ethnicity Data

Please can you provide the research with some personal data. If you are not comfortable indicating your racial group please just tick the abstain box.

Black African; Coloured; Indian/Asian; White; Other; Abstain

Please indicate your ethnic group

Employment
Please can you provide the research with some employment data. If you are not comfortable indicating your employment information please just tick the abstain box.

Unemployed; Jobseeker; Discouraged job seeker; Employed; Self-employed; not economically active; retired; abstain; not applicable.

What is your current employment situation?

Employment
Please can you provide the research with some employment data. If you are not comfortable indicating your income group please just tick the abstain box.

[0-R500]; [R501-R1000]; [R1001-R2000]; [R2001-R4000]; [R4001-R8000]; [R8001-R16000]; R16001-2100]; [over R21000].

Please indicate your monthly income

Additional information

Is there any additional information you would like to add?
Please indicate your gender
Please indicate your age

Thank you

Thank you very much for participating in this survey on environmental assessment public participation. Your time and perspective are greatly appreciated.

I do hope that your input will assist this research in its contribution to the knowledge and understanding how to do public participation better.

Please feel free to contact me if you have any questions. If you would like me to give you a call back regarding any something you would like to say that is not asked in the survey please just send your phone number to this email [rsapublicparticipation@gmail.com] and I will get back to you as soon as possible.

Kind regards,
Nicholas Simpson
PhD candidate UCT (EGS dept)
rsapublicparticipation@gmail.com
0721643037

7.6 Method 4: Likert Survey Multidimentional Poverty and Disability

Multidimentional Poverty	Electricity	Parafin	Wood	Coal	Dung	Other	None	Unsure	Abstain
What source of power does your household use for lighting	1	2	3	4	5	6	7	8	9
What source of power does your household use for heating	1	2	3	4	5	6	7	8	9
What source of power does your household use for cooking	1	2	3	4	5	6	7	8	9

	Yes	No	Unsure	Abstain
Is there piped water on your residence	1	2	3	4
Do you have a flush toilet	1	2	3	4

	Informal shack	traditional dwelling	Tent	Other	Unsure	Abstain	Formal flat or house
Is your dwelling type a:	1	2	3	4	5	6	7

	Yes	No	Unsure	Abstain
Does your household own more than one of any of the following - radio, television, telephone, refrigerator, a car	1	2	3	4

Dissability	None	Mild difficulty	Severe difficulty	Unsure	Abstain
Do you have a medically diagnosed disability of: Sight	1	2	3	4	5
Do you have a medically diagnosed disability of: Hearing	1	2	3	4	5
Do you have a medically diagnosed disability of: Communication	1	2	3	4	5
Do you have a medically diagnosed disability of: Walking/Climbing stairs	1	2	3	4	5
Do you have a medically diagnosed disability of: Remembering/Concentrating	1	2	3	4	5
Do you have a medically diagnosed disability of: Self-Care	1	2	3	4	5

7.6.1 Method 4 Results: Likert Survey Response Modes and Means of the Case Studies

Likert Statements/Questions		All EIA Cases		Case Study 1 PARK		Case Study 2 GAS		Case Study 3 WIND		Case Study 4 MINE		Case Study 5 REDZ	
Code	Unsure 0 / Never 1 / Rarely 2 / Occasionally 3 / Fairly Often 4 / Always 5	Mode	Mean	Mode	Mean	Mode	Mean	Mode	Mean	Mode	Mean	Mode	Mean
Ls1	My idea of a good life is based on my own judgement	5	4,7	5	4,8	5	4,5	5	4,8	5	4,9	4	3,9
Ls2	I have a clear plan of how I would like my life to be	5	4,3	4	4,4	4	4,0	5	4,7	5	4,7	4	4,2
Ls3	I respect, value and appreciate other people	5	4,7	5	5,0	5	4,5	5	4,9	5	4,8	4	3,9
Ls4	I tend to find it difficult to imagine the situation of other people	3	2,6	2	2,2	3	2,8	3	2,8	2	2,3	3	3,2
Ls5	In general I appreciate and value plants, animals and the world of nature	5	4,7	5	4,9	5	4,6	5	4,9	5	4,8	5	4,6
Ls6	I am able to participate in environmental decision making that affects my life if I want to	3	3,5	4	4,3	3	3,7	3	2,9	4	3,3	4	3,6
Ls7	I was an active stakeholder in this process	4	3,3	4	3,9	2	3,1	3	2,9	4	3,7	4	3,9
Ls8	I was a passive stakeholder in this process	2	2,5	1	1,5	4	2,8	4	2,9	2	2,4	3	2,9
Ls9	I achieved more through collaborating with others	4	2,9	5	4,5	4	2,8	2	1,9	3	2,8	4	3,6
Ls10	Environmental assessment makes better decisions through public participation	4	3,6	5	4,5	5	3,4	4	3,4	4	3,7	5	4,9
Ls11	The public participation process in this environmental assessment was fair	2	2,6	5	4,6	2	2,4	3	2,6	2	1,6	4	2,7
Ls12	I considered the rights of future generations in my participation	5	4,0	5	4,5	3	3,6	4	3,5	5	4,7	5	4,8
Ls13	Other stakeholders made decisions with the needs of future generations in mind	2	2,9	5	4,4	2	2,5	2	1,9	3	3,3	3	2,8
Ls14	Decision affecting future generations were adequate	2	2,3	5	4,3	2	1,9	4	2,2	2	2,1	2	2,2
Ls15	How often … “Do to future generations what you would have wanted previous generations to do to you”?	3	2,5	5	4,9	2	2,0	2	2,2	3	2,4	2	2,2
Ls16	I found other stakeholders who shared my views	4	3,8	5	4,5	4	3,3	4	3,5	4	4,4	3	2,1
Ls17	The process provided opportunities where I could collaborate with other stakeholders	3	3,0	5	4,4	3	2,6	3	2,8	3	3,1	1	0,7
Ls18	I was able to give a reasoned explanation of my perspective	3	3,4	5	4,8	2	3,0	4	3,4	4	3,6	0	1,0
Ls19	I was able to change the mind of another stakeholder	1	1,9	3	2,8	1	1,2	2	1,4	4	3,1	0	0,3
Ls20	I have changed my attitude through engaging in discussion with another stakeholder	3	2,7	3	4,0	3	2,2	3	2,9	3	3,0	0	1,0
Ls21	I was able to change the attitude of another stakeholder	0	1,5	5	3,6	0	1,1	1	1,0	2	1,7	1	1,0
Ls22	My participation allowed me to influence what I consider valuable regarding my future environment	2	2,1	5	3,8	2	1,9	2	2,0	2	1,8	1	1,2
Ls23	The rights of future generations should be considered in EA	5	4,8	5	5,0	5	4,6	5	5,0	5	5,0	3	2,5
Ls24	It is fair to make decisions in an environmental assessment that will affect future generations	5	4,0	5	4,0	4	3,6	5	4,4	5	4,6	1	1,8
Ls25	My participation was not allowed in the formal decision making process	1	1,5	1	1,0	1	1,6	1	1,1	1	1,8	0	1,0
Ls26	I felt bullied into accepting a development that was already going ahead	1	1,8	1	1,0	2	2,2	1	1,3	2	1,9	0	0,7
Ls27	I was manipulated into thinking that my opinions count towards decision making	1	2,6	1	1,0	1	2,1	3	2,6	5	4,5	2	2,3
Ls28	Meetings are just to rubber-stamp public (my) approval	4	3,5	1	1,3	3	3,3	4	3,6	5	4,8	3	2,2
Ls29	There was no assurance that my views will be listened to	5	2,4	1	1,3	0	1,0	5	4,1	5	4,9	3	2,1
Ls30	The public participation did not allow for negotiation with the developer	5	2,9	1	1,2	1	2,2	4	3,6	5	4,9	3	2,0
Ls31	The public participation was a top-down process but allowed for negotiation with the developer	4	3,4	5	3,7	5	4,0	3	3,6	2	1,8	0	0,3
Ls32	I shared planning and decision making responsibilities with the developer	1	1,6	0	1,9	1	1,6	2	1,6	1	1,2	1	0,6
Ls33	I was empowered by the process to influence what I consider valuable regarding my future environment	1	1,7	4	3,9	2	1,5	1	1,3	1	1,1	1	1,2
Ls34	I was disempowered by the process from influencing what I consider valuable regarding my future environment	1	1,9	1	0,9	1	1,4	1	1,5	4	3,6	3	2,4

Appendix 7.6.2 presents a summary of the modal (shaded) and mean responses for each of the case studies. The shading of the modes is intended to help the reader consider the responses across each statement or question, as well as indicate a general trend of responses for each case study down the columns. The cases are colour coded in the charts and discussion to follow in the same style as the table. The Likert survey results are presented here, after the Q method social perspectives, in order to reflect the epistemological position that the results of Q method can occasionally inform the emphases given to the 'R' testing of variables across a sample population. In addition to the statistical validity of the sample population, significance of the findings in the Likert survey is not limited to, but is contextualised and explicated by, the previously described social perspectives. To provide an indication of the most frequent response, the mode of each statement and the range integer with the highest count will be highlighted in the data to draw the reader's eye and assist in interpretation. The case study responses to the Likert survey will be explained in general descriptive observation and with the use of tables, charts and box plots[2]. Likert statement number two is abbreviated for the discussion as 'Ls2', and where necessary for the reader, will be followed with the statement or the relevant part of thereof [I have a clear plan of how I would like my life to be].

7.6.2 Method 4 Results: Likert Survey Responses: All EIA cases

Likert Survey Responses: All EIA cases																																		
Examples	Ls1	Ls2	Ls3	Ls4	Ls5	Ls6	Ls7	Ls8	Ls9	Ls10	Ls11	Ls12	Ls13	Ls14	Ls15	Ls16	Ls17	Ls18	Ls19	Ls20	Ls21	Ls22	Ls23	Ls24	Ls25	Ls26	Ls27	Ls28	Ls29	Ls30	Ls31	Ls32	Ls33	Ls34
PARK-001	*5*	*5*	*5*	*2*	*5*	*4*	*4*	*1*	*4*	*5*	*5*	*5*	*4*	*5*	*5*	*4*	*5*	*5*	*3*	*4*	*5*	*5*	*5*	*4*	*1*	*1*	*1*	*1*	*1*	*1*	*4*	*0*	*3*	*1*
MINE -031	*5*	*5*	*5*	*2*	*5*	*3*	*4*	*2*	*4*	*4*	*2*	*5*	*4*	*3*	*2*	*5*	*2*	*4*	*4*	*4*	*2*	*2*	*5*	*5*	*2*	*2*	*4*	*5*	*5*	*5*	*2*	*1*	*1*	*4*
Excel 'Countif' function	Ls1	Ls2	Ls3	Ls4	Ls5	Ls6	Ls7	Ls8	Ls9	Ls10	Ls11	Ls12	Ls13	Ls14	Ls15	Ls16	Ls17	Ls18	Ls19	Ls20	Ls21	Ls22	Ls23	Ls24	Ls25	Ls26	Ls27	Ls28	Ls29	Ls30	Ls31	Ls32	Ls33	Ls34
Always [5]	92	64	97	0	97	20	16	1	21	38	22	58	19	11	16	36	11	27	2	8	7	13	110	70	5	6	18	36	38	36	31	1	8	1
Fairly often [4]	33	51	28	10	29	46	41	32	35	44	15	30	26	20	13	47	23	35	20	13	4	18	17	30	7	12	29	36	13	24	32	9	12	24
Occasionally [3]	3	9	3	59	3	47	37	30	24	26	25	27	28	28	38	26	55	38	27	65	20	16	0	16	4	9	21	32	4	13	32	11	8	21
Rarely [2]	1	5	1	58	0	14	34	39	26	11	37	11	42	36	37	18	32	27	21	27	26	41	1	0	25	37	14	5	15	16	23	35	29	17
Never [1]	0	0	0	2	0	2	1	25	7	0	11	2	0	7	4	2	8	1	32	11	35	10	0	0	80	56	39	16	31	30	9	56	48	47
Unsure [0]	0	0	0	0	0	0	0	2	16	10	19	1	13	27	21	0	0	1	27	5	36	31	1	13	8	9	8	4	28	10	2	17	24	19
Descriptive Statistics	Ls1	Ls2	Ls3	Ls4	Ls5	Ls6	Ls7	Ls8	Ls9	Ls10	Ls11	Ls12	Ls13	Ls14	Ls15	Ls16	Ls17	Ls18	Ls19	Ls20	Ls21	Ls22	Ls23	Ls24	Ls25	Ls26	Ls27	Ls28	Ls29	Ls30	Ls31	Ls32	Ls33	Ls34
Mean	4.7	4.3	4.7	2.6	4.7	3.5	3.3	2.5	2.9	3.6	2.6	4	2.9	2.3	2.5	3.8	3	3.4	1.9	2.7	1.5	2.1	4.8	4	1.5	1.8	2.6	3.5	2.4	2.9	3.4	1.6	1.7	1.9
Median	5	4	5	3	5	4	3	2	3	4	3	4	3	3	3	4	3	3	2	3	2	2	5	5	1	2	3	4	4	4	3	1,5	2	2
Mode	5	5	5	3	5	3	4	2	4	4	2	5	2	2	3	4	3	3	1	3	0	2	5	5	1	1	1	4	5	5	4	1	1	1
Standard Dev	0.6	0.8	0.5	0.7	0.5	0.9	1	1.1	1.6	1.4	1.6	1.1	1.4	1.6	1.5	1.1	1	1.1	1.4	1.1	1.4	1.6	0.6	1.5	1.1	1.2	1.6	1.4	2	1.8	1.3	1.1	1.4	1.4
Range	3	3	3	3	2	4	4	5	5	5	5	5	5	5	5	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Maximum	5	5	5	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Minimum	2	2	2	1	3	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count	129	129	129	129	129	129	129	129	129	129	129	129	128	129	129	129	129	129	129	129	128	129	129	129	129	129	129	129	129	129	129	129	129	129

Descriptive statistics summary of all Likert survey responses

Shapiro-Wilk Test – All EIA cases																																				
	Ls1	Ls2	Ls3	Ls4	Ls5	Ls6	Ls7	Ls8	Ls9	Ls10	Ls11	Ls12	Ls13	Ls14	Ls15	Ls16	Ls17	Ls18	Ls19	Ls20	Ls21	Ls22	Ls23	Ls24	Ls25	Ls26	Ls27	Ls28	Ls29	Ls30	Ls31	Ls32	Ls33	Ls34
W	0.598	0.747	0.561	0.794	0.566	0.893	0.884	0.878	0.900	0.852	0.881	0.815	0.836	0.897	0.869	0.871	0.904	0.885	0.868	0.871	0.827	0.871	0.399	0.699	0.620	0.769	0.854	0.853	0.777	0.832	0.897	0.765	0.778	0.809
p-value	0	1E-13	0	4E-12	0	4E-08	1E-08	8E-09	4E-07	2E-09	7E-08	2E-11	6E-10	9E-07	3E-08	3E-09	1E-07	2E-08	5E-08	6E-09	5E-09	9E-08	0	4E-14	3E-16	2E-12	1E-09	8E-10	5E-11	2E-10	7E-08	4E-12	3E-11	1E-10
alpha	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Normal distribution	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no

Appendix 7.6.3 presents the summary descriptive statistics and categorised responses to the Likert survey for all four (PARK, GAS, WIND and MINE) EIA cases. The following five tables will present each of the EIA cases as well as the SEA. The presentation format has been standardised for all these six tables. Each table introduces two examples of the Likert responses to the 34 survey questions for the case presented. The Likert survey questions are indicated in code, for example Ls1 represents question one of the survey. The responses for each survey category was identified using the Excel 'CountIF' function. The modal responses for each question response are indicated in dark grey shading. For example 'Ls1' has a mode of 92 responses (out of 129) indicating 'Always' for that question. The descriptive statistics are provided at the bottom of the table to indicate the mean, median, mode, standard deviation, range, maximum, minimum and count for that question. Discussion of the survey responses is included in the analysis chapter where the analysis is structured and limited to the capability probes. In that discussion the response distributions will elaborate on how the stakeholders participation experience is indicated in these responses.

7.6.2.1 Method 4 Results: Likert Survey Responses: Case Study 1 - PARK

Likert Survey Responses: PARK																																		
Examples	Ls1	Ls2	Ls3	Ls4	Ls5	Ls6	Ls7	Ls8	Ls9	Ls10	Ls11	Ls12	Ls13	Ls14	Ls15	Ls16	Ls17	Ls18	Ls19	Ls20	Ls21	Ls22	Ls23	Ls24	Ls25	Ls26	Ls27	Ls28	Ls29	Ls30	Ls31	Ls32	Ls33	Ls34
PARK-001	*5*	*5*	*5*	*2*	*5*	*4*	*4*	*1*	*4*	*5*	*5*	*5*	*4*	*5*	*5*	*4*	*5*	*5*	*3*	*4*	*5*	*5*	*5*	*4*	*1*	*1*	*1*	*1*	*1*	*1*	*4*	*0*	*3*	*1*
PARK-002	*5*	*5*	*5*	*2*	*5*	*4*	*4*	*1*	*5*	*5*	*5*	*5*	*5*	*4*	*5*	*5*	*4*	*5*	*3*	*3*	*0*	*5*	*5*	*5*	*1*	*1*	*1*	*1*	*3*	*2*	*4*	*2*	*3*	*1*
Excel 'Countif' function	Ls1	Ls2	Ls3	Ls4	Ls5	Ls6	Ls7	Ls8	Ls9	Ls10	Ls11	Ls12	Ls13	Ls14	Ls15	Ls16	Ls17	Ls18	Ls19	Ls20	Ls21	Ls22	Ls23	Ls24	Ls25	Ls26	Ls27	Ls28	Ls29	Ls30	Ls31	Ls32	Ls33	Ls34
Always [5]	14	7	17	0	15	6	3	0	10	13	12	13	10	10	16	10	8	13	1	6	7	10	17	10	0	0	0	0	0	0	7	0	6	0
Fairly often [4]	3	10	0	0	2	10	10	1	6	2	4	3	6	5	1	5	8	4	3	5	1	2	0	3	0	0	0	0	0	0	4	5	7	0
Occasionally [3]	0	0	0	4	0	1	3	1	1	1	1	0	0	1	0	2	0	0	10	6	7	2	0	2	0	0	0	2	1	1	4	2	3	0
Rarely [2]	0	0	0	12	0	0	1	3	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	3	2	0	2	0	0
Never [1]	0	0	0	1	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	17	17	14	13	14	0	3	0	16
Unsure [0]	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0	0	0	3	0	1	3	0	2	0	0	0	0	0	0	2	5	1	1
Descriptive Statistics	Ls1	Ls2	Ls3	Ls4	Ls5	Ls6	Ls7	Ls8	Ls9	Ls10	Ls11	Ls12	Ls13	Ls14	Ls15	Ls16	Ls17	Ls18	Ls19	Ls20	Ls21	Ls22	Ls23	Ls24	Ls25	Ls26	Ls27	Ls28	Ls29	Ls30	Ls31	Ls32	Ls33	Ls34
Mean	4.8	4.4	5	2.2	4.9	4.3	3.9	1.5	4.5	4.5	4.6	4.5	4.4	4.3	4.9	4.5	4.4	4.8	2.8	4	3.6	3.8	5	4	1	1	1	1.3	1.3	1.2	3.7	1.9	3.9	0.9
Median	5	4	5	2	5	4	4	1	5	5	5	5	5	5	5	5	4	5	3	4	3	5	5	5	1	1	1	1	1	1	4	2	4	1
Mode	5	4	5	2	5	4	4	1	5	5	5	5	5	5	5	5	5	5	3	3	5	5	5	5	1	1	1	1	1	1	5	0	4	1
Standard Dev	0.4	0.5	0	0.5	0.3	0.6	0.8	0.9	0.6	1.3	0.6	1.2	1.2	1.3	0.2	0.7	0.8	0.4	1.4	0.9	1.4	1.9	0	1.7	0	0	0	0.7	0.6	0.6	1.6	1.7	1.2	0.2
Range	1	1	0	2	1	2	3	3	2	5	2	5	5	5	1	2	3	1	5	2	5	5	0	5	0	0	0	2	2	2	5	4	5	1
Maximum	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
Minimum	4.8	4.4	5	2.2	4.9	4.3	3.9	1.5	4.5	4.5	4.6	4.5	4.4	4.3	4.9	4.5	4.4	4.8	2.8	4	3.6	3.8	5	4	1	1	1	1.3	1.3	1.2	3.7	1.9	3.9	0.9
Count	5	4	5	2	5	4	4	1	5	5	5	5	5	5	5	5	4	5	3	4	3	5	5	5	1	1	1	1	1	1	4	2	4	1

7.6.2.2 Method 4 Results: Likert Survey Responses: Case Study 2 - GAS

Likert Survey Responses: GAS																																		
Examples	Ls1	Ls2	Ls3	Ls4	Ls5	Ls6	Ls7	Ls8	Ls9	Ls10	Ls11	Ls12	Ls13	Ls14	Ls15	Ls16	Ls17	Ls18	Ls19	Ls20	Ls21	Ls22	Ls23	Ls24	Ls25	Ls26	Ls27	Ls28	Ls29	Ls30	Ls31	Ls32	Ls33	Ls34
GAS-001	*4*	*4*	*4*	*3*	*3*	*3*	*2*	*4*	*4*	*4*	*3*	*4*	*3*	*3*	*3*	*4*	*3*	*3*	*3*	*2*	*3*	*3*	*4*	*4*	*4*	*4*	*4*	*4*	*4*	*4*	*3*	*2*	*1*	*2*
GAS -002	*3*	*5*	*3*	*4*	*4*	*4*	*4*	*3*	*4*	*4*	*3*	*3*	*3*	*2*	*2*	*3*	*3*	*2*	*2*	*3*	*2*	*2*	*4*	*3*	*2*	*5*	*5*	*5*	*2*	*5*	*3*	*1*	*2*	*1*
Excel 'Countif' function	Ls1	Ls2	Ls3	Ls4	Ls5	Ls6	Ls7	Ls8	Ls9	Ls10	Ls11	Ls12	Ls13	Ls14	Ls15	Ls16	Ls17	Ls18	Ls19	Ls20	Ls21	Ls22	Ls23	Ls24	Ls25	Ls26	Ls27	Ls28	Ls29	Ls30	Ls31	Ls32	Ls33	Ls34
Always [5]	36	20	38	0	38	13	10	1	11	18	10	18	3	1	0	12	0	8	1	2	0	3	42	17	3	4	1	10	0	3	21	1	2	0
Fairly often [4]	21	29	19	9	20	21	13	22	18	17	7	15	13	7	6	16	9	10	1	3	3	12	17	24	4	9	11	19	4	14	21	4	5	3
Occasionally [3]	3	7	3	31	3	22	10	15	6	13	12	18	11	13	17	15	26	19	5	21	6	3	0	13	3	7	13	22	1	7	15	8	4	9
Rarely [2]	1	5	1	20	0	3	27	11	12	6	17	8	26	20	21	16	18	23	11	20	8	22	1	0	15	20	11	4	12	13	4	17	20	12
Never [1]	0	0	0	1	0	2	1	10	4	0	1	2	0	4	4	2	8	1	30	10	19	1	0	0	29	16	18	2	18	16	0	19	10	24
Unsure [0]	0	0	0	0	0	0	0	2	10	7	14	0	7	16	13	0	0	0	13	5	24	20	1	7	7	5	7	4	26	8	0	12	20	13
Descriptive Statistics	Ls1	Ls2	Ls3	Ls4	Ls5	Ls6	Ls7	Ls8	Ls9	Ls10	Ls11	Ls12	Ls13	Ls14	Ls15	Ls16	Ls17	Ls18	Ls19	Ls20	Ls21	Ls22	Ls23	Ls24	Ls25	Ls26	Ls27	Ls28	Ls29	Ls30	Ls31	Ls32	Ls33	Ls34
Mean	4.5	4	4.5	2.8	4.6	3.7	3.1	2.8	2.8	3.4	2.4	3.6	2.5	1.9	2	3.3	2.6	3	1.2	2.2	1.1	1.9	4.6	3.6	1.6	2.2	2.1	3.3	1	2.2	4	1.6	1.5	1.4
Median	5	4	5	3	5	4	3	3	3	4	2	4	2	2	2	3	3	3	1	2	1	2	5	4	1	2	2	3	1	2	4	1	2	1
Mode	5	4	5	3	5	3	2	4	4	5	2	3	2	2	2	4	3	2	1	3	0	2	5	4	1	2	1	3	0	1	5	1	2	1

Standard Dev	0.7	0.9	0.7	0.7	0.6	1	1.2	1.2	1.7	1.6	1.7	1.1	1.3	1.4	1.3	1.2	0.9	1.1	1	1.1	1.2	1.6	0.8	1.5	1.3	1.4	1.4	1.3	1.1	1.5	0.9	1.2	1.4	1.1
Range	3	3	3	3	2	4	4	5	5	5	5	4	5	5	4	4	3	4	5	5	4	5	5	5	5	5	5	5	4	5	3	5	5	4
Maximum	61	61	61	61	61	61	61	61	61	61	61	61	60	61	61	61	61	61	61	61	60	61	61	61	61	61	61	61	61	61	61	61	61	61
Minimum	4.5	4	4.5	2.8	4.6	3.7	3.1	2.8	2.8	3.4	2.4	3.6	2.5	1.9	2	3.3	2.6	3	1.2	2.2	1.1	1.9	4.6	3.6	1.6	2.2	2.1	3.3	1	2.2	4	1.6	1.5	1.4
Count	5	4	5	3	5	4	3	3	3	4	2	4	2	2	2	3	3	3	1	2	1	2	5	4	1	2	2	3	1	2	4	1	2	1

7.6.2.3 Method 4 Results: Likert Survey Responses: Case Study 3 - WIND

Likert Survey Responses: WIND																																		
Examples	Ls1	Ls2	Ls3	Ls4	Ls5	Ls6	Ls7	Ls8	Ls9	Ls10	Ls11	Ls12	Ls13	Ls14	Ls15	Ls16	Ls17	Ls18	Ls19	Ls20	Ls21	Ls22	Ls23	Ls24	Ls25	Ls26	Ls27	Ls28	Ls29	Ls30	Ls31	Ls32	Ls33	Ls34
WEF-001	*5*	*5*	*5*	*3*	*5*	*3*	*3*	*2*	*2*	*4*	*0*	*4*	*2*	*4*	*3*	*4*	*3*	*3*	*2*	*3*	*0*	*3*	*5*	*5*	*1*	*1*	*3*	*3*	*4*	*0*	*4*	*2*	*1*	*3*
WEF -002	*4*	*4*	*5*	*3*	*5*	*3*	*2*	*3*	*4*	*0*	*3*	*3*	*0*	*0*	*2*	*2*	*3*	*2*	*0*	*3*	*1*	*3*	*5*	*5*	*2*	*2*	*0*	*4*	*5*	*2*	*3*	*2*	*2*	*1*
Excel 'Countif' function																																		
	Ls1	Ls2	Ls3	Ls4	Ls5	Ls6	Ls7	Ls8	Ls9	Ls10	Ls11	Ls12	Ls13	Ls14	Ls15	Ls16	Ls17	Ls18	Ls19	Ls20	Ls21	Ls22	Ls23	Ls24	Ls25	Ls26	Ls27	Ls28	Ls29	Ls30	Ls31	Ls32	Ls33	Ls34
Always [5]	15	13	17	0	18	0	0	0	0	2	0	3	0	0	0	0	0	2	0	0	0	0	20	16	0	0	0	0	11	6	3	0	0	0
Fairly often [4]	5	7	3	1	2	2	2	9	2	10	4	7	0	8	2	12	1	8	0	0	0	1	0	1	0	1	5	12	5	6	7	0	0	1
Occasionally [3]	0	0	0	14	0	14	13	3	3	5	10	7	4	2	6	6	14	7	3	18	0	5	0	1	0	1	7	8	2	5	9	1	1	4
Rarely [2]	0	0	0	5	0	4	5	5	9	1	3	3	13	3	9	2	5	2	8	1	4	8	0	0	3	1	3	0	0	1	1	10	6	3
Never [1]	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	2	1	11	4	0	0	16	16	4	0	0	0	0	9	11	7
Unsure [0]	0	0	0	0	0	0	0	0	3	2	3	0	3	7	3	0	0	1	7	0	5	2	0	2	1	1	1	0	2	2	0	0	2	5
Descriptive Statistics																																		
	Ls1	Ls2	Ls3	Ls4	Ls5	Ls6	Ls7	Ls8	Ls9	Ls10	Ls11	Ls12	Ls13	Ls14	Ls15	Ls16	Ls17	Ls18	Ls19	Ls20	Ls21	Ls22	Ls23	Ls24	Ls25	Ls26	Ls27	Ls28	Ls29	Ls30	Ls31	Ls32	Ls33	Ls34
Mean	4.8	4.7	4.9	2.8	4.9	2.9	2.9	2.9	1.9	3.4	2.6	3.5	1.9	2.2	2.2	3.5	2.8	3.4	1.4	2.9	1	2	5	4.4	1.1	1.3	2.6	3.6	4.1	3.6	3.6	1.6	1.3	1.5
Median	5	5	5	3	5	3	3	3	2	4	3	3.5	2	2.5	2	4	3	3.5	2	3	1	2	5	5	1	1	3	4	5	4	3.5	2	1	1
Mode	5	5	5	3	5	3	3	4	2	4	3	4	2	4	2	4	3	4	2	3	1	2	5	5	1	1	3	4	5	4	3	2	1	1
Standard Dev	0.4	0.5	0.4	0.5	0.3	0.6	0.6	1.2	1.2	1.3	1.3	0.9	0.9	1.8	1.2	0.7	0.5	1.1	1.1	0.5	0.7	1.1	0	1.6	0.4	0.9	1.2	0.5	1.5	1.5	0.8	0.6	0.7	1.2
Range	1	1	1	2	1	2	2	3	4	5	4	3	3	4	4	2	2	5	3	2	2	4	0	5	2	4	4	1	5	5	3	2	3	4
Maximum	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Minimum	4.8	4.7	4.9	2.8	4.9	2.9	2.9	2.9	1.9	3.4	2.6	3.5	1.9	2.2	2.2	3.5	2.8	3.4	1.4	2.9	1	2	5	4.4	1.1	1.3	2.6	3.6	4.1	3.6	3.6	1.6	1.3	1.5
Count	5	5	5	3	5	3	3	3	2	4	3	3.5	2	2.5	2	4	3	3.5	2	3	1	2	5	5	1	1	3	4	5	4	3.5	2	1	1

7.6.2.4 Method 4 Results: Likert Survey Responses: Case Study 4 - MINE

Likert Survey Responses: MINE																																		
Examples	Ls1	Ls2	Ls3	Ls4	Ls5	Ls6	Ls7	Ls8	Ls9	Ls10	Ls11	Ls12	Ls13	Ls14	Ls15	Ls16	Ls17	Ls18	Ls19	Ls20	Ls21	Ls22	Ls23	Ls24	Ls25	Ls26	Ls27	Ls28	Ls29	Ls30	Ls31	Ls32	Ls33	Ls34
MINE-001	5	5	5	2	5	4	4	2	3	5	1	5	3	3	3	4	2	5	0	3	0	1	5	5	1	1	4	5	5	5	2	1	1	3
MINE -002	5	5	4	3	5	3	5	2	2	3	2	4	5	2	2	5	4	3	2	3	3	2	5	5	2	5	5	5	5	5	1	1	0	4
Excel 'Countif' function	Ls1	Ls2	Ls3	Ls4	Ls5	Ls6	Ls7	Ls8	Ls9	Ls10	Ls11	Ls12	Ls13	Ls14	Ls15	Ls16	Ls17	Ls18	Ls19	Ls20	Ls21	Ls22	Ls23	Ls24	Ls25	Ls26	Ls27	Ls28	Ls29	Ls30	Ls31	Ls32	Ls33	Ls34
Always [5]	27	24	25	0	26	1	3	0	0	5	0	24	6	0	0	14	3	4	0	0	0	0	31	27	2	2	17	26	27	27	0	0	0	1
Fairly often [4]	4	5	6	0	5	13	16	0	9	15	0	5	7	0	4	14	5	13	16	5	0	3	0	2	3	2	13	5	4	4	0	0	0	20
Occasionally [3]	0	2	0	10	0	10	11	11	14	7	2	2	13	12	15	3	15	12	9	20	7	6	0	0	1	1	1	0	0	0	4	0	0	8
Rarely [2]	0	0	0	21	0	7	1	20	5	4	17	0	3	13	7	0	8	2	2	6	13	11	0	0	7	16	0	0	0	0	18	6	3	2
Never [1]	0	0	0	0	0	0	0	0	0	0	10	0	0	3	0	0	0	0	0	0	5	5	0	0	18	7	0	0	0	0	9	25	27	0
Unsure [0]	0	0	0	0	0	0	0	0	3	0	2	0	2	3	5	0	0	0	4	0	6	6	0	2	0	3	0	0	0	0	0	0	1	0
Descriptive Statistics	Ls1	Ls2	Ls3	Ls4	Ls5	Ls6	Ls7	Ls8	Ls9	Ls10	Ls11	Ls12	Ls13	Ls14	Ls15	Ls16	Ls17	Ls18	Ls19	Ls20	Ls21	Ls22	Ls23	Ls24	Ls25	Ls26	Ls27	Ls28	Ls29	Ls30	Ls31	Ls32	Ls33	Ls34
Mean	4.9	4.7	4.8	2.3	4.8	3.3	3.7	2.4	2.8	3.7	1.6	4.7	3.3	2.1	2.4	4.4	3.1	3.6	3.1	3	1.7	1.8	5	4.6	1.8	1.9	4.5	4.8	4.9	4.9	1.8	1.2	1.1	3.6
Median	5	5	5	2	5	3	4	2	3	4	2	5	3	2	3	4	3	4	4	3	2	2	5	5	1	2	5	5	5	5	2	1	1	4
Mode	5	5	5	2	5	4	4	2	3	4	2	5	3	2	3	4	3	4	4	3	2	2	5	5	1	2	5	5	5	5	2	1	1	4
Standard Dev	0.3	0.6	0.4	0.5	0.4	0.9	0.7	0.5	1.2	0.9	0.7	0.6	1.3	0.9	1.2	0.7	0.9	0.8	1.3	0.6	1	1.2	0	1.3	1.3	1.2	0.6	0.4	0.3	0.3	0.6	0.4	0.4	0.7
Range	1	2	1	1	1	3	3	1	4	3	3	2	5	3	4	2	3	3	4	2	3	4	0	5	4	5	2	1	1	1	2	1	2	3
Maximum	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Minimum	4.9	4.7	4.8	2.3	4.8	3.3	3.7	2.4	2.8	3.7	1.6	4.7	3.3	2.1	2.4	4.4	3.1	3.6	3.1	3	1.7	1.8	5	4.6	1.8	1.9	4.5	4.8	4.9	4.9	1.8	1.2	1.1	3.6
Count	5	5	5	2	5	3	4	2	3	4	2	5	3	2	3	4	3	4	4	3	2	2	5	5	1	2	5	5	5	5	2	1	1	4

7.6.2.5 Method 4 Results: Likert Survey Responses: Case Study 5 - REDZ

Likert Survey Responses: REDZ									
Examples	Ls1	Ls2	Ls3	Ls4	Ls5	Ls6	Ls25	Ls33	Ls34
REDZ-001	*3*	*4*	*3*	*2*	*5*	*3*	*0*	*1*	*3*
REDZ -002	*4*	*4*	*4*	*3*	*5*	*4*	*2*	*2*	*2*
Excel 'Countif' function	Ls1	Ls2	Ls3	Ls4	Ls5	Ls6	Ls25	Ls33	Ls34
Always	5	7	6	3	16	1	0	0	0
Fairly often	14	18	12	6	9	14	0	0	3
Occasionally	7	1	8	10	1	10	1	0	10
Rarely	0	0	0	7	0	1	11	6	9
Never	0	0	0	0	0	0	1	18	2
Unsure	0	0	0	0	0	0	13	2	2
Descriptive Statistics	Ls1	Ls2	Ls3	Ls4	Ls5	Ls6	Ls25	Ls33	Ls34
Mean	3.9	4.2	3.9	3.2	4.6	3.6	1	1.2	2.4
Median	4	4	4	3	5	4	0.5	1	2.5
Mode	4	4	4	3	5	4	0	1	3

Standard Deviation	0.7	0.5	0.7	1	0.6	0.6	1.1	0.5	1.1
Range	2	2	2	3	2	3	3	2	4
Count	26	26	26	26	26	26	26	26	26

7.6.3 All EIA Case Studies Likert Survey Results

	Functionings and Capabilities Participation - Likert - [Always 5, Fairly often 4, Occasionaly 3, Rarely 2, Never 1, Unsure 0**]**																																
Respondent ID	Ls1	Ls2	Ls3	Ls4	Ls5	Ls6	Ls7	Ls8	Ls9	Ls10	Ls11	Ls12	Ls13	Ls14	Ls15	Ls16	Ls17	Ls18	Ls19	Ls20	Ls21	Ls22	Ls23	Ls24	Ls25	Ls26	Ls27	Ls28	Ls29	Ls30	Ls31	Ls32	Ls33	Ls34
PARK Likert Survey Results																																		
PARK-001	5	5	5	2	5	4	4	1	4	5	5	5	4	5	5	4	5	5	3	4	5	5	5	4	1	1	1	1	1	1	4	0	3	1
PARK-002	5	5	5	2	5	4	4	1	5	5	5	5	5	4	5	5	4	5	3	3	0	5	5	5	1	1	1	1	3	2	4	2	3	1
PARK-003	4	4	5	3	4	4	3	2	3	5	5	5	4	5	5	5	5	4	4	3	3	4	5	4	1	1	1	1	2	1	5	4	4	1
PARK-004	5	4	5	2	5	4	4	1	5	5	5	5	5	4	5	4	5	5	3	5	3	5	5	4	1	1	1	1	1	1	0	0	5	1
PARK-005	5	4	5	2	5	4	3	1	5	5	5	5	5	3	5	5	5	5	3	4	5	5	5	5	1	1	1	1	1	1	3	4	5	1
PARK-006	4	4	5	3	5	4	4	1	5	5	5	5	5	5	5	4	5	5	0	5	3	3	5	5	1	1	1	1	1	2	5	1	5	1
PARK-007	5	5	5	2	5	5	5	3	4	5	4	5	5	4	5	4	4	5	3	3	5	5	5	5	1	1	1	2	1	1	5	4	4	1
PARK-008	5	4	5	2	5	5	5	1	4	4	5	4	4	5	5	5	4	4	4	5	2	0	5	5	1	1	1	1	2	1	3	3	3	1
PARK-009	5	4	5	1	5	4	4	1	5	5	5	5	5	4	5	5	4	5	0	5	5	5	5	5	1	1	1	1	1	1	0	0	5	1
PARK-010	5	5	5	2	4	4	3	1	5	5	5	5	5	5	5	5	4	5	3	5	5	5	5	5	1	1	1	3	1	1	5	2	4	1
PARK-011	5	5	5	2	5	4	4	1	4	4	5	5	4	5	5	4	5	4	3	4	5	5	5	0	1	1	1	1	1	1	3	0	4	1
PARK-012	5	4	5	3	5	5	4	2	5	5	4	0	5	5	5	5	5	5	4	4	3	4	5	5	1	1	1	1	1	1	5	1	4	1
PARK-013	5	5	5	2	5	5	5	1	5	5	5	4	5	5	5	5	4	5	5	3	5	0	5	3	1	1	1	1	1	1	4	4	5	1
PARK-014	4	4	5	2	5	4	4	2	4	5	5	5	4	5	5	5	5	4	3	3	3	5	5	5	1	1	1	1	1	1	5	4	4	1
PARK-015	5	4	5	2	5	3	4	1	5	5	4	5	5	5	5	5	4	5	3	5	3	5	5	5	1	1	1	1	1	1	5	1	5	1
PARK-016	5	5	5	2	5	5	2	4	4	3	3	5	4	4	4	3	4	5	0	3	3	3	5	3	1	1	1	3	2	3	4	3	0	1
PARK-017	5	4	5	3	5	5	4	1	5	0	4	4	0	0	5	3	2	5	3	4	4	0	5	0	1	1	1	1	1	1	3	0	4	0
GAS Likert Survey Results																																		
Respondent ID	Ls1	Ls2	Ls3	Ls4	Ls5	Ls6	Ls7	Ls8	Ls9	Ls10	Ls11	Ls12	Ls13	Ls14	Ls15	Ls16	Ls17	Ls18	Ls19	Ls20	Ls21	Ls22	Ls23	Ls24	Ls25	Ls26	Ls27	Ls28	Ls29	Ls30	Ls31	Ls32	Ls33	Ls34
GAS-0001	4	4	4	3	3	3	2	4	4	4	3	4	3	3	3	4	3	3	3	2	3	3	4	4	4	4	4	4	4	4	3	2	1	2
GAS-0002	3	5	3	4	4	4	4	3	4	4	3	3	3	2	2	3	3	2	2	3	2	2	4	3	2	5	5	5	2	5	3	1	2	1
GAS-0003	2	2	2	4	4	5	5	2	4	4	5	1	5	4	4	1	2	4	5	5	0	5	2	0	5	2	2	3	0	3	5	5	5	1
GAS-0004	4	5	5	2	5	3	5	1	5	5	2	5		1	1	4	4	4	3	3	3	2	5	4	1	4	3	3	2	3	3	3	2	2
GAS-0005	5	5	4	4	5	5	5	1	4	4	1	5	4	2	2	5	3	5	4	3	4	4	5	5	3	4	4	3	4	4	4	2	4	1
GAS-0006	4	4	5	3	5	2	3	2	4	5	5	5	2	2	3	4	3	3	1	1	1	2	5	4	2	2	1	0	1	4	2	1	1	2
GAS-0007	5	4	5	3	5	3	2	4	5	5	5	5	5	3	3	5	3	3	1	1	1	4	5	5	0	4	0	4	0	3	4	1	4	1
GAS-0008	5	5	5	3	5	1	4	1	4	4	2	5	4	4	4	5	3	5	2	3		4	5	5	2	1	3	1	0	4	2	1	4	1
GAS-0009	5	4	5	2	5	5	5	0	4	4	4	5	3	3	4	5	4	4	3	1	3	4	4	4	1	1	1	2	2	1	2	3	1	3
GAS-0010	5	5	3	2	5	3	4	4	3	2	5	2	2	2	1	3	3	5	1	1	1	0	4	5	3	0	4	5	1	4	2	1	0	0

GAS-0011	5	4	4	4	4	4	2	4	5	4	0	4	4	0	0	4	4	3	3	3	3	0	5	5	0	0	0	0	2	4	3	1	0	1
GAS-0012	4	4	5	4	4	3	3	4	4	4	2	5	4	2	2	4	3	3	1	2	1	2	4	0	0	1	3	3	1	3	4	1	2	1
GAS-0013	4	4	4	3	3	3	3	2	5	5	2	5	4	2	2	5	3	2	2	2	2	0	5	4	4	2	2	1	2	4	5	1	0	0
GAS-0014	5	5	4	3	5	5	4	2	4	4	2	4	2	2	3	5	4	4	2	1	2	2	5	5	1	3	3	3	2	2	4	1	1	2
GAS-0015	5	4	4	3	4	4	5	4	5	5	2	5	4	1	0	5	4	3	2	1	0	0	5	4	2	1	3	3	0	5	5	1	0	1
GAS-0016	5	4	5	3	4	4	4	2	5	5	2	5	4	2	2	5	3	4	1	3	1	2	5	4	0	0	0	4	1	4	4	1	2	1
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GAS-0018	4	4	4	4	5	3	4	2	4	4	3	4	3	3	2	4	4	5	2	1	2	4	5	5	0	0	2	3	2	4	3	0	4	1
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GAS-0020	4	4	5	2	5	4	4	1	5	4	4	5	4	4	4	5	3	4	3	3	0	4	5	5	2	3	3	4	0	3	3	1	1	3
GAS-0021	5	5	5	4	5	4	2	1	4	5	2	5	4	2	0	1	4	3	1	1	1	0	4	5	1	2	2	2	1	4	4	1	0	0
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GAS-0023	5	5	5	3	3	5	4	1	3	5	2	5	2	2	2	4	3	3	1	2	1	4	5	5	3	2	0	3	1	0	3	0	1	1
GAS-0024	5	4	4	3	5	1	5	2	4	4	5	4	3	1	2	5	2	2	1	1	1	0	4	4	5	5	4	2	1	3	4	1	0	0
GAS-0025	5	5	4	2	5	3	5	2	4	5	5	4	2	0	0	4	4	3	2	2	0	2	5	4	1	4	4	3	0	4	3	2	2	2
GAS-0026	5	5	5	3	4	4	4	0	3	5	5	5	4	2	4	4	3	4	1	3	3	5	5	3	4	4	1	4	3	4	4	2	3	3
GAS-0027	4	4	5	3	4	4	5	1	4	5	4	3	0	1	3	5	3	3	2	2	2	0	5	4	0	0	0	3	2	4	4	0	0	1
GAS-0028	3	4	3	2	5	4	2	4	5	4	5	5	3	0	2	4	3	3	1	2	0	3	4	5	0	5	0	0	0	0	4	3	3	2
GAS-0029	5	4	5	2	4	3	2	4	2	2	2	2	2	0	0	2	1	2	1	0	0	0	5	3	1	1	1	3	0	0	3	1	0	0
GAS-0030	4	4	5	1	4	4	2	3	0	0	0	3	2	3	0	3	2	3	0	2	0	2	5	0	1	1	1	4	0	1	4	0	1	2
GAS-0031	5	5	5	2	5	3	2	5	1	5	0	3	2	0	2	2	2	4	0	3	0	2	5	3	2	2	1	5	0	2	3	0	2	1
GAS-0032	4	5	5	2	5	5	2	4	0	4	0	4	2	0	0	4	2	5	0	3	0	3	0	0	1	3	3	4	0	2	5	4	3	1
GAS-0033	4	3	5	3	5	3	3	3	2	4	4	4	2	0	2	3	2	1	2	3	1	0	4	4	1	2	1	5	1	1	5	2	0	0
GAS-0034	5	5	4	2	5	5	2	3	3	3	3	3	3	2	2	4	2	2	1	4	1	2	5	4	1	1	4	5	1	2	4	3	2	4
GAS-0035	5	4	5	3	5	3	2	4	0	0	0	3	2	0	2	2	2	2	0	3	0	0	5	4	4	4	4	5	0	2	5	0	0	0
GAS-0036	4	4	5	3	5	3	3	2	3	5	3	5	0	3	3	3	1	2	1	0	1	0	5	3	1	2	1	3	1	0	3	3	0	3
GAS-0037	5	4	5	2	5	4	5	1	0	3	4	2	2	5	3	2	3	3	2	3	0	2	5	3	1	2	4	3	0	3	5	0	2	3
GAS-0038	5	4	5	3	5	3	2	4	4	3	4	4	3	0	2	4	2	4	1	2	4	5	5	4	2	2	1	5	4	2	5	4	5	2
GAS-0039	4	2	5	3	4	5	2	3	0	0	0	3	2	3	0	3	1	2	1	2	0	2	4	0	1	1	1	4	0	1	4	0	2	1
GAS-0040	5	5	5	3	5	2	2	4	4	3	0	4	0	0	2	4	2	4	1	3	1	4	5	4	1	3	2	5	1	2	5	4	1	4
GAS-0041	4	2	4	3	4	4	3	3	2	3	3	3	3	2	2	2	3	2	0	2	0	1	4	4	1	2	2	4	0	1	4	2	1	2
GAS-0042	5	4	5	2	5	4	2	4	1	3	3	3	2	2	3	2	1	2	1	0	1	0	5	3	1	1	1	3	1	0	3	2	0	0
GAS-0043	5	3	4	3	5	4	2	4	2	4	3	4	2	3	3	3	2	2	1	2	2	2	5	4	1	2	3	4	2	1	5	3	2	1
GAS-0044	5	3	5	3	4	5	3	3	2	3	0	2	4	0	3	3	2	3	1	3	1	2	5	3	1	1	1	4	1	1	5	2	2	1
GAS-0045	5	4	5	2	4	3	2	3	0	0	0	2	2	0	0	2	3	2	1	4	0	0	5	0	2	2	2	3	0	2	4	0	0	0
GAS-0046	4	2	5	3	4	4	2	3	0	0	0	3	2	3	0	2	1	2	0	2	0	2	4	4	2	1	1	4	0	1	4	2	2	3
GAS-0047	5	4	5	2	4	3	2	4	2	2	2	2	2	0	0	3	3	3	1	3	1	2	4	4	1	4	4	3	1	2	4	2	2	1
GAS-0048	4	5	5	3	5	5	5	1	1	3	4	4	0	3	3	2	2	3	0	2	0	0	5	4	1	3	2	4	0	1	5	2	0	0
GAS-0049	5	4	5	3	5	4	2	4	2	3	5	4	2	0	2	2	1	2	1	0	1	0	5	3	2	1	1	3	1	0	3	3	0	1
GAS-0050	5	4	4	2	5	3	2	3	2	3	2	2	2	4	3	3	3	2	0	2	0	0	5	5	1	2	3	4	0	1	5	2	0	0

GAS-0051	4	3	5	2	5	3	1	4	0	0	0	3	2	2	1	3	3	3	1	2	1	2	4	3	5	5	4	4	1	1	5	0	2	1
GAS-0052	5	5	5	3	4	5	2	4	4	5	3	4	3	4	3	4	3	5	1	3	0	4	5	5	1	2	1	5	0	2	5	4	2	3
GAS-0053	5	3	5	2	5	2	3	3	2	3	2	3	2	0	2	2	2	2	1	4	2	4	5	5	2	3	3	3	2	2	4	2	4	2
GAS-0054	5	4	4	3	5	5	2	3	2	2	3	3	0	3	2	3	2	5	0	3	3	4	5	5	1	2	2	4	2	1	5	2	3	3
GAS-0055	5	3	4	3	5	3	3	3	1	3	2	3	2	3	3	2	2	2	1	3	1	2	5	4	2	2	2	4	1	1	5	2	2	1
GAS-0056	5	5	5	2	5	5	2	4	0	5	2	3	0	4	3	2	3	2	0	3	0	0	5	5	1	3	3	5	0	1	5	0	0	0
GAS-0057	4	4	5	3	5	4	4	1	2	2	2	3	4	2	4	2	1	2	1	0	1	0	5	3	1	1	1	3	1	0	3	1	0	1
GAS-0058	5	4	5	2	4	3	2	4	2	2	0	2	2	0	0	2	2	2	1	3	0	2	5	0	2	2	1	2	0	1	5	2	2	4
GAS-0059	4	3	4	3	5	3	2	4	3	3	3	3	3	2	3	3	2	2	0	2	0	0	5	4	1	2	3	4	0	2	5	3	0	0
GAS-0060	4	2	5	3	4	4	2	3	0	0	0	3	2	3	0	2	1	2	1	2	0	2	4	4	1	1	1	4	0	1	4	0	2	1
GAS-0061	5	5	4	3	5	3	3	3	5	5	0	5	2	2	2	5	4	5	1	5	4	2	4	5	1	1	2	3	4	4	5	1	2	3
WIND Likert Survey Results																																		
Respondent ID	Ls1	Ls2	Ls3	Ls4	Ls5	Ls6	Ls7	Ls8	Ls9	Ls10	Ls11	Ls12	Ls13	Ls14	Ls15	Ls16	Ls17	Ls18	Ls19	Ls20	Ls21	Ls22	Ls23	Ls24	Ls25	Ls26	Ls27	Ls28	Ls29	Ls30	Ls31	Ls32	Ls33	Ls34
WIND-001	5	5	5	3	5	3	3	2	2	4	0	4	2	4	3	4	3	3	2	3	0	3	5	5	1	1	3	3	4	0	4	2	1	3
WIND-002	4	4	5	3	5	3	2	3	4	0	3	3	0	0	2	2	3	2	0	3	1	3	5	5	2	2	0	4	5	2	3	2	2	1
WIND-003	5	4	5	2	5	3	3	2	0	4	2	2	2	2	2	3	3	5	3	3	2	2	5	5	1	1	4	3	5	4	3	1	1	2
WIND-004	5	5	5	3	5	2	3	2	2	3	3	3	3	3	2	3	2	4	3	3	1	1	5	5	1	1	3	3	5	5	3	2	1	1
WIND-005	5	5	5	3	5	3	4	2	2	2	2	5	3	0	2	4	3	5	2	1	1	1	5	5	1	4	4	4	4	3	2	1	1	4
WIND-006	5	5	5	2	5	3	3	4	1	3	3	4	0	0	0	4	2	3	0	3	0	2	5	5	1	1	3	3	5	5	3	2	2	0
WIND-007	4	4	4	2	5	3	3	1	0	4	4	3	2	4	3	3	3	4	2	3	1	3	5	5	1	1	1	4	5	5	3	2	1	1
WIND-008	4	4	4	3	5	4	4	4	2	5	0	5	2	4	4	4	3	4	2	3	1	4	5	0	1	1	1	4	3	4	4	1	1	2
WIND-009	5	5	5	3	5	3	3	3	2	4	3	4	0	0	2	2	2	3	0	3	1	3	5	5	1	3	3	3	0	0	3	1	0	0
WIND-010	4	5	5	3	5	2	3	2	3	4	3	4	3	3	3	3	3	4	1	3	2	0	5	3	1	1	2	4	4	4	4	1	1	3
WIND-011	5	4	5	4	4	3	3	4	2	4	2	2	2	2	0	3	3	4	2	3	0	2	5	5	2	1	2	4	4	4	4	2	2	1
WIND-012	5	5	5	3	5	3	2	4	4	3	3	3	2	4	3	4	3	0	0	3	1	2	5	5	1	1	4	4	5	5	4	2	1	0
WIND-013	5	5	5	3	5	3	3	1	2	3	3	4	2	4	4	4	4	3	2	2	1	1	5	5	1	1	1	3	5	5	5	2	1	1
WIND-014	5	5	5	2	5	2	3	4	0	0	0	4	3	0	2	4	3	3	0	3	2	2	5	5	1	1	4	4	5	5	5	2	2	2
WIND-015	5	5	5	3	5	3	3	4	3	4	4	3	2	4	3	3	3	4	1	3	0	2	5	4	0	0	3	4	4	4	4	1	1	1
WIND-016	5	5	5	3	5	3	2	4	3	3	3	4	2	0	0	4	2	4	2	3	1	2	5	5	1	1	3	4	5	3	3	3	2	3
WIND-017	5	5	5	3	5	3	3	3	2	4	3	3	2	4	2	4	3	3	0	3	0	0	5	5	1	1	1	3	5	3	4	1	2	0
WIND-018	4	4	5	3	4	3	2	4	1	4	3	3	2	2	2	4	2	4	3	3	1	1	5	5	1	1	3	4	0	3	3	1	3	1
WIND-019	5	5	4	2	5	4	3	4	2	5	4	5	2	4	3	4	3	3	2	3	2	3	5	5	2	1	2	4	3	4	5	2	1	3
WIND-020	5	4	5	3	5	2	2	1	1	4	4	2	2	0	2	4	3	2	0	3	1	2	5	0	1	1	4	3	5	3	3	1	0	0
MINE Likert Survey Results																																		
Respondent ID	Ls1	Ls2	Ls3	Ls4	Ls5	Ls6	Ls7	Ls8	Ls9	Ls10	Ls11	Ls12	Ls13	Ls14	Ls15	Ls16	Ls17	Ls18	Ls19	Ls20	Ls21	Ls22	Ls23	Ls24	Ls25	Ls26	Ls27	Ls28	Ls29	Ls30	Ls31	Ls32	Ls33	Ls34
MINE-001	5	5	5	2	5	4	4	2	3	5	1	5	3	3	3	4	2	5	0	3	0	1	5	5	1	1	4	5	5	5	2	1	1	3
MINE-002	5	5	4	3	5	3	5	2	2	3	2	4	5	2	2	5	4	3	2	3	3	2	5	5	2	5	5	5	5	5	1	1	0	4
MINE-003	5	5	5	3	5	4	4	2	3	4	1	5	3	3	4	4	2	3	3	2	2	1	5	5	1	2	4	5	5	5	2	1	1	4
MINE-004	5	4	5	2	4	2	3	3	3	4	0	5	5	0	3	3	3	4	4	3	3	0	5	4	2	2	5	5	5	5	3	1	1	4

MINE-005	5	5	5	3	5	3	4	2	4	4	2	5	5	3	3	4	3	3	3	4	3	2	5	5	4	1	5	5	5	5	2	2	1	4
MINE-006	5	5	4	3	5	4	4	2	0	5	1	5	5	2	2	5	2	3	4	4	2	0	5	5	1	2	5	5	5	5	1	1	1	4
MINE-007	5	5	5	3	5	2	3	2	3	4	1	5	2	3	3	4	2	2	4	3	1	2	5	5	1	0	5	4	4	5	2	2	1	3
MINE-008	5	5	5	2	5	3	4	3	2	3	2	3	4	3	3	4	3	4	3	3	3	4	5	5	1	2	5	4	4	4	2	1	2	4
MINE-009	5	3	5	2	5	3	2	2	4	4	1	4	4	2	0	5	4	4	0	3	0	3	5	0	5	1	4	5	5	5	3	1	1	2
MINE-010	5	5	5	2	5	4	3	2	3	3	1	5	3	1	3	3	3	3	2	2	2	1	5	5	1	2	4	5	5	5	2	2	1	4
MINE-011	5	5	5	2	5	4	4	2	3	2	2	5	3	2	3	4	5	5	4	3	2	2	5	5	2	4	4	5	5	5	1	1	2	3
MINE-012	5	4	5	2	5	2	5	3	4	4	2	5	5	2	0	4	3	3	3	3	1	0	5	5	4	0	5	5	5	5	2	1	1	2
MINE-013	5	5	4	2	4	3	3	3	0	5	3	5	3	3	3	5	4	3	3	4	2	3	5	5	1	2	5	4	4	4	2	1	1	3
MINE-014	5	4	5	2	4	4	4	2	3	4	2	5	0	0	2	4	3	2	0	3	0	3	5	5	2	1	5	5	5	5	1	1	1	3
MINE-015	4	5	5	3	5	4	4	3	4	2	1	5	4	2	3	4	3	3	4	3	3	2	5	5	2	2	5	5	5	5	3	1	1	4
MINE-016	5	5	4	2	5	4	3	3	4	4	2	4	3	2	2	3	4	3	4	3	2	2	5	5	1	2	4	5	5	5	2	2	1	4
MINE-017	5	5	5	2	5	3	4	2	3	4	2	5	3	3	3	5	2	4	3	2	2	0	5	5	1	3	5	5	5	5	2	1	1	4
MINE-018	4	5	5	2	5	5	4	2	0	3	1	5	3	2	4	4	3	3	4	3	3	4	5	4	3	2	5	5	5	5	1	1	1	3
MINE-019	5	5	5	3	5	2	4	2	2	4	2	5	4	1	0	5	3	4	3	3	0	1	5	5	1	1	5	5	5	5	2	1	1	4
MINE-020	5	4	5	2	4	4	3	3	3	5	2	5	5	2	4	4	3	4	4	3	1	2	5	5	2	2	5	5	5	4	1	1	1	4
MINE-021	5	5	5	2	5	3	3	3	4	2	2	5	2	3	3	5	5	4	4	3	2	0	5	5	1	0	4	5	5	5	1	1	2	4
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MINE-025	5	5	5	2	5	2	3	3	2	4	2	5	3	3	0	5	2	4	4	3	3	4	5	5	1	2	4	5	5	5	1	1	1	4
MINE-026	5	4	5	3	4	4	5	2	3	3	1	4	2	2	3	5	3	4	4	2	2	3	5	5	1	4	4	5	5	5	2	1	1	4
MINE-027	5	5	5	2	5	4	4	2	3	4	2	5	4	2	2	4	3	5	3	2	2	0	5	5	4	2	5	5	5	5	3	1	1	4
MINE-028	4	5	5	3	5	2	3	2	4	5	1	3	4	3	0	5	5	4	4	3	0	3	5	5	1	1	5	5	5	5	2	1	1	3
MINE-029	5	5	4	3	5	3	3	3	3	4	2	4	3	1	4	4	3	3	3	2	1	2	5	5	1	5	5	4	4	4	1	1	1	4
MINE-030	5	3	5	2	5	4	3	2	2	2	2	5	3	2	3	5	3	4	4	3	2	3	5	5	1	2	3	5	5	5	2	2	1	4
MINE-031	5	5	5	2	5	3	4	2	4	4	2	5	4	3	2	5	2	4	4	4	2	2	5	5	2	2	4	5	5	5	2	1	1	4

	Ls1	Ls2	Ls3	Ls4	Ls5	Ls6	Ls7	Ls8	Ls9	Ls10	Ls11	Ls12	Ls13	Ls14	Ls15	Ls16	Ls17	Ls18	Ls19	Ls20	Ls21	Ls22	Ls23	Ls24	Ls25	Ls26	Ls27	Ls28	Ls29	Ls30	Ls31	Ls32	Ls33	Ls34
Always	92	64	97	0	97	20	16	1	21	38	22	58	19	11	16	36	11	27	2	8	7	13	110	70	5	6	18	36	38	36	31	1	8	1
Fairly often	33	51	28	10	29	46	41	32	35	44	15	30	26	20	13	47	23	35	20	13	4	18	17	30	7	12	29	36	13	24	32	9	12	24
Occasionally	3	9	3	59	3	47	37	30	24	26	25	27	28	28	38	26	55	38	27	65	20	16	0	16	4	9	21	32	4	13	32	11	8	21
Rarely	1	5	1	58	0	14	34	39	26	11	37	11	42	36	37	18	32	27	21	27	26	41	1	0	25	37	14	5	15	16	23	35	29	17
Never	0	0	0	2	0	2	1	25	7	0	11	2	0	7	4	2	8	1	32	11	35	10	0	0	80	56	39	16	31	30	9	56	48	47
Unsure	0	0	0	0	0	0	0	2	16	10	19	1	13	27	21	0	0	1	27	5	36	31	1	13	8	9	8	4	28	10	2	17	24	19

	Ls1	Ls2	Ls3	Ls4	Ls5	Ls6	Ls7	Ls8	Ls9	Ls10	Ls11	Ls12	Ls13	Ls14	Ls15	Ls16	Ls17	Ls18	Ls19	Ls20	Ls21	Ls22	Ls23	Ls24	Ls25	Ls26	Ls27	Ls28	Ls29	Ls30	Ls31	Ls32	Ls33	Ls34
Mean	5	4	5	3	5	4	3	3	3	4	3	4	3	2	3	4	3	3	2	3	2	2	5	4	2	2	3	3	2	3	3	2	2	2
Standard Error	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Median	5	4	5	3	5	4	3	2	3	4	2	4	3	2	3	4	3	3	2	3	1	2	5	5	1	1	3	4	2	3	3	1	1	1

Mode	5	5	5	3	5	3	4	2	4	4	2	5	2	2	3	4	3	3	1	3	0	2	5	5	1	1	1	4	5	5	4	1	1	1
Standard Deviation	1	1	1	1	0	1	1	1	2	1	2	1	1	2	2	1	1	1	1	1	1	2	1	2	1	1	2	1	2	2	1	1	1	1
Sample Variance	0	1	0	0	0	1	1	1	2	2	3	1	2	2	2	1	1	1	2	1	2	3	0	2	1	2	3	2	4	3	2	1	2	2
Kurtosis	4	1	5	0	2	0	-1	-1	-1	1	-1	0	0	-1	-1	-1	0	-1	-1	1	0	-1	35	2	3	0	-1	0	-2	-1	-1	0	0	-1
Skewness	-2	-1	-2	0	-2	0	0	0	0	-1	0	-1	0	0	0	-1	0	0	0	0	1	0	-5	-2	2	1	0	-1	0	0	0	1	1	0
Range	3	3	3	3	2	4	4	5	5	5	5	5	5	5	5	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Maximum	5	5	5	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Minimum	2	2	2	1	3	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sum	603	561	608	335	610	455	424	326	376	466	330	515	367	298	324	484	384	444	245	352	198	277	620	518	195	235	336	446	315	377	434	200	218	245
Count	129	129	129	129	129	129	129	129	129	129	129	129	128	129	129	129	129	129	129	129	128	129	129	129	129	129	129	129	129	129	129	129	129	129

7.6.4 Case Study 5 REDZs SEA Likert Survey Responses

Respondent ID	**Functionings and Capabilities Participation - Likert - [Always 5, Fairly often 4, Occasionaly 3, Rarely 2, Never 1, Unsure 0]**																																	
REDZs Likert Survey Responses																																		
	Ls1	Ls2	Ls3	Ls4	Ls5	Ls6	Ls7	Ls8	Ls9	Ls10	Ls11	Ls12	Ls13	Ls14	Ls15	Ls16	Ls17	Ls18	Ls19	Ls20	Ls21	Ls22	Ls23	Ls24	Ls25	Ls26	Ls27	Ls28	Ls29	Ls30	Ls31	Ls32	Ls33	Ls34
REDZ1-001	3	4	3	2	5	3	4	3	4	5	1	5	3	2	2	3	1	0	0	0	2	1	3	1	0	0	3	3	3	3	0	1	1	3
REDZ1-002	4	4	4	3	5	4	4	3	4	5	4	5	3	3	3	2	0	2	0	1	1	2	3	3	2	2	2	2	2	2	0	0	2	2
REDZ1-003	4	5	4	4	5	4	4	3	4	5	4	5	0	2	2	0	0	0	0	3	0	1	0	1	2	2	0	0	0	0	1	1	1	4
REDZ1-004	5	4	5	3	5	2	4	2	4	4	2	3	2	3	3	0	2	2	0	2	0	2	3	0	0	0	2	0	0	0	0	0	0	0
REDZ1-005	3	4	3	2	5	3	4	3	4	5	1	5	3	2	2	3	1	0	0	0	2	1	3	1	0	0	3	3	3	3	0	1	1	3
REDZ1-006	4	4	3	3	4	3	4	3	4	5	2	3	3	2	2	2	1	2	2	2	0	1	3	1	2	1	4	3	0	3	2	1	2	2
REDZ1-007	5	4	5	3	4	4	4	3	3	5	4	5	3	2	3	2	0	2	0	1	1	2	3	4	0	0	2	2	2	3	0	0	2	2
REDZ1-008	3	4	5	2	4	3	4	3	4	5	1	5	3	2	2	3	1	0	0	0	2	1	3	1	0	0	3	3	3	3	0	1	1	3
REDZ1-009	5	4	5	2	5	3	4	3	4	5	1	5	3	2	2	3	1	0	0	0	2	1	3	1	0	0	3	3	3	3	0	1	1	3
REDZ1-010	4	4	3	3	4	3	4	3	4	5	2	5	3	1	0	4	2	3	0	2	0	1	3	1	0	0	2	4	3	0	0	1	1	3
REDZ2-011	4	4	4	3	5	4	4	3	4	5	4	5	0	2	2	3	1	0	1	2	0	1	0	1	1	0	0	0	0	0	1	1	1	4
REDZ2-012	5	4	5	3	5	4	4	3	3	5	4	5	3	4	3	2	0	2	1	0	1	2	3	3	2	2	2	2	3	4	0	0	1	1
REDZ2-013	3	3	3	3	4	3	4	3	4	4	1	4	3	2	2	2	1	0	0	0	0	0	3	1	0	0	3	3	3	3	0	1	1	3
REDZ2-014	4	4	4	4	5	4	3	3	2	5	4	5	3	3	3	1	0	2	0	1	1	1	3	3	2	2	4	2	2	2	0	0	2	2
REDZ2-015	4	5	5	4	4	4	4	3	4	5	2	5	3	1	0	4	2	0	0	2	0	1	0	1	0	0	2	4	3	0	0	1	0	0
REDZ3-016	4	5	4	4	5	4	4	3	4	5	4	5	0	2	2	0	0	0	0	3	0	1	0	1	2	2	0	0	0	0	1	1	1	4
REDZ3-017	4	4	3	2	4	3	4	3	4	5	1	5	3	2	2	3	1	0	2	0	2	1	3	1	0	0	3	3	5	3	0	1	1	3
REDZ3-018	3	5	4	5	5	4	4	3	4	5	4	5	4	3	3	2	0	2	0	2	1	2	3	3	2	1	2	2	2	2	1	0	1	2
REDZ3-019	4	4	4	3	4	3	4	3	4	5	1	5	3	2	2	3	1	0	0	0	2	1	3	1	0	0	3	3	3	3	0	1	1	3
REDZ3-020	4	4	3	2	5	4	4	4	4	5	1	5	3	2	2	3	1	0	0	0	2	1	3	1	0	0	3	3	3	3	0	1	1	3
REDZ3-021	3	5	4	5	5	4	4	3	4	5	4	5	4	3	3	2	0	2	0	2	1	2	3	3	2	1	2	2	2	2	1	0	1	2
REDZ3-022	4	4	4	4	5	4	3	3	2	5	4	5	3	3	3	1	0	2	0	1	1	1	3	3	2	2	4	2	2	2	0	0	2	2
REDZ3-023	4	4	4	3	5	4	4	3	4	5	4	5	3	3	3	2	0	2	0	1	1	2	3	3	2	2	2	2	2	2	0	0	2	2
REDZ3-024	3	5	4	5	5	4	4	3	4	5	4	5	4	3	3	2	0	2	0	2	1	2	3	3	2	1	2	2	2	2	1	0	1	2
REDZ3-025	5	4	3	2	4	3	4	3	4	5	1	5	3	2	2	3	1	0	2	0	2	1	3	1	0	0	3	4	4	3	0	1	1	3

REDZ3-026	4	5	4	4	3	5	4	0	0	4	4	4	4	0	0	0	2	1	0	0	1	0	2	3	3	0	1	1	0	0	0	0	1	1

	Ls1	Ls2	Ls3	Ls4	Ls5	Ls6	Ls7	Ls8	Ls9	Ls10	Ls11	Ls12	Ls13	Ls14	Ls15	Ls16	Ls17	Ls18	Ls19	Ls20	Ls21	Ls22	Ls23	Ls24	Ls25	Ls26	Ls27	Ls28	Ls29	Ls30	Ls31	Ls32	Ls33	Ls34
Always	5	7	6	3	16	1	0	0	0	23	0	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Fairly often	14	18	12	6	9	14	24	1	21	3	13	2	4	1	0	2	0	0	0	0	0	0	0	1	0	0	3	3	1	1	0	0	0	3
Occasionally	7	1	8	10	1	10	2	23	2	0	0	2	18	8	10	9	0	1	0	2	0	0	21	9	1	0	9	9	10	11	0	0	0	10
Rarely	0	0	0	7	0	1	0	1	2	0	4	0	1	14	13	9	4	11	3	8	8	8	1	0	11	7	10	9	8	7	1	0	6	9
Never	0	0	0	0	0	0	0	0	0	0	9	0	0	2	0	2	11	1	2	5	10	16	0	15	1	4	1	1	0	0	6	15	18	2
Unsure	0	0	0	0	0	0	0	1	1	0	0	0	3	1	3	4	11	13	21	11	8	2	4	1	13	15	3	4	6	7	19	11	2	2

	Ls1	Ls2	Ls3	Ls4	Ls5	Ls6	Ls7	Ls8	Ls9	Ls10	Ls11	Ls12	Ls13	Ls14	Ls15	Ls16	Ls17	Ls18	Ls19	Ls20	Ls21	Ls22	Ls23	Ls24	Ls25	Ls26	Ls27	Ls28	Ls29	Ls30	Ls31	Ls32	Ls33	Ls34
Mean	4	4	4	3	5	4	4	3	4	5	3	5	3	2	2	2	1	1	0	1	1	1	3	2	1	1	2	2	2	2	0	1	1	2
Standard Error	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Median	4	4	4	3	5	4	4	3	4	5	3	5	3	2	2	2	1	1	0	1	1	1	3	1	1	0	2	2	2	2	0	1	1	3
Mode	4	4	4	3	5	4	4	3	4	5	4	5	3	2	2	3	1	0	0	0	1	1	3	1	0	0	2	3	3	3	0	1	1	3
Standard Deviation	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Sample Variance	0	0	1	1	0	0	0	0	1	0	2	0	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	2	2	0	0	0	1
Kurtosis	-1	0	-1	-1	0	0	10	17	9	5	-2	5	3	1	1	0	-1	-2	3	-1	-1	0	2	-1	-2	-1	0	0	0	-1	2	-2	0	0
Skewness	0	0	0	0	-1	0	-3	-4	-3	-3	0	-3	-2	0	-1	-1	0	0	2	0	0	0	-2	0	0	1	-1	-1	0	-1	2	0	0	-1
Range	2	2	2	3	2	3	1	4	4	1	3	2	4	4	3	4	2	3	2	3	2	2	3	4	3	2	4	4	5	4	2	1	2	4
Maximum	5	5	5	5	5	5	4	4	4	5	4	5	4	4	3	4	2	3	2	3	2	2	3	4	3	2	4	4	5	4	2	1	2	4
Minimum	3	3	3	2	3	2	3	0	0	4	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sum	102	110	102	83	119	93	102	75	94	127	69	124	72	58	56	55	19	26	8	27	26	32	65	46	26	18	60	58	55	51	8	15	30	62
Count	4	4	4	3	5	4	4	3	4	5	3	5	3	2	2	2	1	1	0	1	1	1	3	2	1	1	2	2	2	2	0	1	1	2

7.7.1 Aggregate EIA Data Exploration of relationships using Pearson's coefficient

Correlations between Capabilities

All Cases		Ls4	Ls6	Ls25	Ls33	Ls34
	Ls4		-0.02	0.0984	0.0168	-0.1942
	Ls6			-0.1063	0.257	-0.2191
	Ls25				-0.062	0.0143
	Ls33					**-0.583**

Coding
P-value
lower than 0,5
lower than 0,05
Bold = correl > 0,5

Correlations between L6 and Functionings statements

		Ls7	Ls8	Ls9	Ls12	Ls18	Ls22
All	Ls6	0.16	-0.12	0.20	0.04	0.14	0.26
PARK	Ls6	0.2161	0.4434	-0.1102	**-0.64**	0.0429	-0.41
GAS	Ls6	0.0773	-0.0861	-0.04	-0.083	0.1163	0.03
WIND	Ls6	0.2758	0.39	0.03	0.4028	0.12	0.19
MINE	Ls6	0.14	-0.31	0.54	0.15	-0.0924	0.58

Correlations between L33 and Functionings statements

		Ls7	Ls8	Ls9	Ls12	Ls18	Ls22
All	Ls33	0.13	-0.23	0.41	0.01	0.40	0.66
PARK	Ls33	-0.14	-0.14	0.47	0.13	0.348	-0.20
GAS	Ls33	0.06	0.09	0.04	-0.05	0.32	**0.58**
WIND	Ls33	0.04	**0.50**	-0.29	-0.25	-0.28	-0.22
MINE	Ls33	0.29	0.21	0.28	-0.23	0.29	0.37

Correlations between L34 and Functionings statements

		Ls7	Ls8	Ls9	Ls12	Ls18	Ls22
All	Ls34	0.06	0.05	-0.25	0.23	-0.04	-0.32
PARK	Ls34	0.00	**0.75**	-0.21	0.10	0.15	**-0.60**
GAS	Ls34	-0.11	0.03	0.02	0.02	0.08	0.10
WIND	Ls34	0.34	-0.01	0.08	**0.65**	0.24	0.10
MINE	Ls34	0.10	0.20	-0.21	0.07	0.17	-0.31

Correlations between Functionings

All Cases		Ls8	Ls9	Ls12	Ls18	Ls22
	Ls7	**-0.60**	0.29	0.33	0.32	0.20
	Ls8		-0.31	-0.33	-0.29	-0.24
	Ls9			0.422	0.369	0.427
	Ls12				0.34	0.213
	Ls18					0.405

Correlations between Capabilities and Participation experience statements

All Cases		Ls17	Ls25	Ls26	Ls27	Ls28	Ls29	Ls30	Ls31	Ls32
	Ls4	-0.14	0.10	0.09	-0.02	0.00	-0.11	0.10	0.17	-0.06
	Ls6	0.1121	-0.1063	-0.092	-0.3211	-0.149	-0.3368	-0.37	0.214	0.321
	Ls25	-0.0445		0.3429	0.255	0.1763	0.0825	0.213	-0.03	-0.1
	Ls33	0.3135	-0.062	-0.1083	**-0.564**	**-0.69**	**-0.624**	**-0.59**	0.473	0.489
	Ls34	-0.1584	0.0143	0.1844	**0.585**	**0.603**	**0.64**	**0.5**	**-0.55**	-0.26

P-value
lower than 0,5
lower than 0,05
Bold = correl > 0,5

Correlations between Functionings and Participation experience

All Cases		Ls17	Ls25	Ls26	Ls27	Ls28	Ls29	Ls30	Ls31	Ls32
	Ls7	0.33	0.08	0.07	0.16	0.10	0.00	0.221	-0	-0.15
	Ls8	-0.3621	0.0697	0.1145	0.0613	0.4131	0.0986	0.002	0.178	0.145
	Ls9	**0.533**	0.1335	0.043	-0.0893	-0.3691	0.3429	-0.08	0.106	0.076
	Ls12	0.3672	-0.0116	0.0405	0.1014	-0.0586	0.0667	0.241	-0.29	-0.13
	Ls18	0.0351	-0.1323	-0.1734	-0.1034	-0.2342	0.0156	0.035	-0.09	0.092
	Ls22	0.3776	0.1019	-0.0981	-0.4638	**-0.503**	-0.477	-0.38	0.255	0.391

Correlations between normative claim of procedural 'Fairness' and Adequacy of actual process

	Ls10	Ls12	Ls13	Ls14	Ls15	Ls22	Ls23	Ls24
Ls11	0.28	0.00	0.17	**0.51**	0.43	**0.52**	-0.17	-0.25
Ls24	0.04	0.30	0.1155	0.067	0.0847	0.017	0.21	

Correlations between 'Active'/'Passive' and collaboration

	Ls9	Ls16	Ls17	Ls18	Ls19	Ls20	Ls21
Ls7	0.29	0.39	0.37	0.32	0.45	0.07	0.33
Ls8	-0.31	-0.32	-0.36	-0.29	-0.37	-0.23	-0.34

7.7.2 Correlation relationships in cases when filtered according to available demographic characteristics

Correlations between Capabilities and Functionings statements (Pearson's coeff (Fisher's test))

Key

P-value < 0,5
P-value < 0,05
Pearsons coeff > 0,5

Ethnicity Filter

Cases		Ls22[all]	1	2	4		Ls22[all]	1	2	4		Ls22[all]	1	2	4
All EIAs	Ls6	0,26				Ls33	**0,66**	**0,67**	0,35	0,48	Ls34	-0,32			
PARK	Ls6	-0,41				Ls33	-0,20				Ls34	**-0,60**			
GAS	Ls6	0,03				Ls33	**0,58**				Ls34	0,10			
WIND	Ls6	0,19				Ls33	-0,22				Ls34	0,10			
MINE	Ls6	0,58				Ls33	0,37				Ls34	-0,31			

Ethnicity	Code	Count
Black African	1	29
Coloured	2	13
White	4	87
		129

Education Filter

Cases		Ls22[all]				Ls22[all]				Ls22[all]
All EIAs	Ls6	0,26	Ls33	**0,66**	Ls34	-0,32
PARK	Ls6	-0,41	Ls33	-0,20	Ls34	**-0,60**
GAS	Ls6	0,03	Ls33	**0,58**	Ls34	0,10
WIND	Ls6	0,19	Ls33	-0,22	Ls34	0,10
MINE	Ls6	0,58	Ls33	0,37	Ls34	-0,31

Education	Code	Count
No formal education	0	1
Grade 7	1	0
Grade 10	2	6
Grade 11	3	14
Grade 12	4	8
National Diploma	5	7
Advanced Certificate	6	12
Bachelor Degree	7	54
Bachelor (4yr) Honours	8	20
Master	9	6
PhD	10	1
		129

Employment Status Filter

Cases		Ls22[all]		Ls22[all]	1		4	5	7		Ls22[all]
All EIAs	Ls6	0,26	Ls33	**0,66**		**0,65**	**0,66**	**0,69**	**0,62**	Ls34	-0,32
PARK	Ls6	-0,41	Ls33	-0,20						Ls34	**-0,60**
GAS	Ls6	0,03	Ls33	**0,58**						Ls34	0,10
WIND	Ls6	0,19	Ls33	-0,22						Ls34	0,10
MINE	Ls6	0,58	Ls33	0,37						Ls34	-0,31

Employment Status	Code	Count
Unemployed	1	6
Jobseeker	2	2
Discouraged job seeker	3	4
Employed	4	80
Self-employed	5	11
Retired	7	25
Not applicable	8	1
		129

Monthly Income Filter

Cases		Ls22[all]	Ls22[2]	Ls22[8]		Ls22[all]	Ls22[2]	Ls22[3]	Ls22[4]	Ls22[5]	Ls22[6]	Ls22[7]	Ls22[8]		Ls22[all]
All EIAs	Ls6	0,26	0,16		Ls33	**0,66**	**0,59**	**0,65**	**0,69**	**0,69**	0,21	0,31	0,29	Ls34	-0,32
PARK	Ls6	-0,41			Ls33	-0,20								Ls34	**-0,60**
GAS	Ls6	0,03			Ls33	**0,58**								Ls34	0,10
WIND	Ls6	0,19		**0,55**	Ls33	-0,22								Ls34	0,10
MINE	Ls6	0,58			Ls33	0,37								Ls34	-0,31

Monthly Income Key	Code	Count
Abstain	0	35
R0-R500	1	0
R501-R1000	2	7
R1001-R2000	3	6
R2001-R4000	4	13
R4001-R8000	5	11
R8001-R16000	6	10
R16001-R21000	7	19
Over 21000	8	28
		129

Correlations between Capabilities and Functionings statements (Pearson's coeff (Fisher's test))

Key

P-value < 0,5
P-value < 0,05
Pearsons coeff > 0,5

Participant 1st Language Filter

Cases		Ls22[all]	1	2	3	4		Ls22[all]	1	2	3	4		Ls22[all]	1	2	3
All EIAs	Ls6	0,26	0,18	0,18	0,28		Ls33	**0,66**	0,49	0,48	0,68		Ls34	-0,32			
PARK	Ls6	-0,41			0,28		Ls33	-0,20					Ls34	**-0,60**			
GAS	Ls6	0,03					Ls33	**0,58**	0,49	0,49	0,67		Ls34	0,10			
WIND	Ls6	0,19		0,19			Ls33	-0,22					Ls34	0,10			
MINE	Ls6	0,58	0,18				Ls33	0,37					Ls34	-0,31			

Participant 1st Language	Code	Count
Afrikaans	1	26
English	2	76
Xhosa	3	12
Zulu	4	15
		129

Residence Filter

Cases		Ls22[all]	1	2		Ls22[all]	1	2		Ls22[all]	1	2
All EIAs	Ls6	0,26			Ls33	**0,66**			Ls34	-0,32		
PARK	Ls6	-0,41			Ls33	-0,20			Ls34	**-0,60**		
GAS	Ls6	0,03			Ls33	**0,58**			Ls34	0,10		
WIND	Ls6	0,19			Ls33	-0,22			Ls34	0,10		
MINE	Ls6	0,58			Ls33	0,37			Ls34	-0,31		

Residence	Code	Count
Local	1	101
non-local	2	28
		129

Representation Filter

Cases		Ls22[all]	1	4	8		Ls22[all]	1	4	8		Ls22[all]	1	4	8
All EIAs	Ls6	0,26				Ls33	**0,66**	0,62	0,68	0,66	Ls34	-0,32			
PARK	Ls6	-0,41				Ls33	-0,20				Ls34	**-0,60**			
GAS	Ls6	0,03				Ls33	**0,58**				Ls34	0,10			
WIND	Ls6	0,19	0,24	0,24	0,26	Ls33	-0,22				Ls34	0,10			
MINE	Ls6	0,58				Ls33	0,37				Ls34	-0,31			

Representation	Code	Count
Individual/Self	1	81
Environmental NGOs	2	5
Civil society	3	4
Other Civil Society	4	11
Rates/tax payers association	6	3
Historical/Heritage Association	7	2
Local Business Interest	8	19
Non-Resident Business Interest	9	1
Local Government	15	3
		129

Age Filter

Cases		Ls22[all]	3	4	5		Ls22[all]	3	4	5		Ls22[all]	3	4	5
All EIAs	Ls6	0,26				Ls33	**0,66**	0,66	0,66	0,62	Ls34	-0,32			
PARK	Ls6	-0,41				Ls33	-0,20				Ls34	**-0,60**			
GAS	Ls6	0,03				Ls33	**0,58**				Ls34	0,10			
WIND	Ls6	0,19				Ls33	-0,22				Ls34	0,10			
MINE	Ls6	0,58				Ls33	0,37				Ls34	-0,31			

Age	Code	Count
0-18 years old	1	0
19-25	2	5
26-50	3	38
51-65	4	66
66-70	5	17
0ver 70	6	3
Abstain	0	0
		129

Gender Filter

Cases		Ls22[all]	1	2		Ls22[all]	1	2		Ls22[all]	1	2
All EIAs	Ls6	0,26	0,26		Ls33	**0,66**	0,66		Ls34	-0,32		
PARK	Ls6	-0,41			Ls33	-0,20			Ls34	**-0,60**		
GAS	Ls6	0,03			Ls33	**0,58**			Ls34	0,10		
WIND	Ls6	0,19			Ls33	-0,22			Ls34	0,10		
MINE	Ls6	0,58			Ls33	0,37			Ls34	-0,31		

Gender	Code	Count
Female	1	39
Male	2	90
Abstain	0	0
		129